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Telephony.

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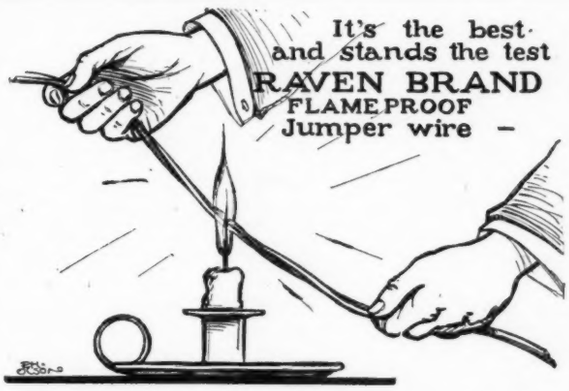

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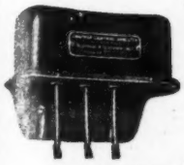
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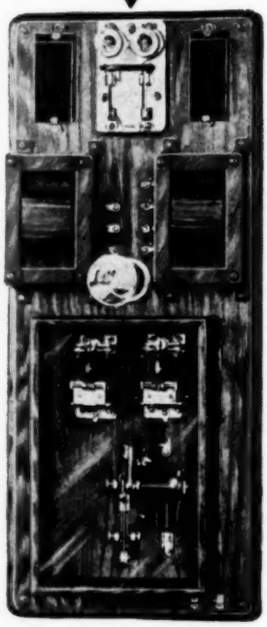

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Telephony.

THE AMERICAN TELEPHONE JOURNAL

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PUBLIC SERVICE REGULATION.

Property invested in a public service is at least as fairly entitled to protection of the laws as property in its more selfish forms. Regulation should not be carried to the point where it becomes destructive of property rights, and it should give the railroad owner a ready access to the courts, so that his right of property may be protected.

Partial confiscation through unjust laws will deter people from making further investments; and further investments are constantly necessary to keep our railroads abreast of the times and make them efficient public servants.—Governor McCall, of Massachusetts.

Accurate Information for Subscribers.

Too much emphasis cannot be laid upon the importance of furnishing accurate information to subscribers regarding service conditions on the local system, when these have departed somewhat from the normal due to construction changes, accidents, or other causes.

In a recent instance the private branch telephone switchboard at a prominent state capitol building was changed over from an old type to a new. The transfer was made shortly after 9 a. m., but through misunderstandings among the chief operators of other telephone exchanges in the city, it was impossible to get an accurate report as to the conditions existing well up toward noon, and many efforts from outside stations to communicate with the capitol were unavailing.

It would seem unnecessary to urge the vital importance of acquainting chief operators in adjacent exchanges with the completion of such a task, and yet the troubles resulting from this instance were numerous. One chief operator reported as late as 12:15 p. m. that the cut-over had not been completed, when as a matter of fact the task had been finished early in the forenoon. Greater care in keeping different exchanges posted as to the state of service available in such important branch exchanges and, in fact, any abnormally situated local lines, will save time and money for all concerned, both the company and subscribers.

Rates for Measured Service Extension Sets.

Public utility commissions have made many investigations of rates for telephone service. These investigations, however, have been mainly confined to what might be termed "main line service" and have not included rates charged for conveniences such as extension sets. The Massachusetts Public Service Commission, however, several months ago began an investigation of rates for extension telephone service and its ruling was made public last week. Several hearings were held and a great amount of testimony relative to costs of the equipment and service was taken.

The Massachusetts commission is the third to rule upon rates for extension set service, the New York Public Service Commission and the Nevada Railroad Commission having issued rulings last June. These decisions were in favor of a charge of $6 per year. In the New York case, the commission held that a rate of $6 per year was not an unreasonable charge for the service furnished in consideration of the accommodation afforded. The Nevada commission, in its ruling, reduced the rental charge for the telephone extension sets from $12 to $6 per year.

The Massachusetts commission has considered only the case of extension sets in connection with metered service and has ordered a reduction from $6 to $4 per year for such service. This will affect, it is estimated, some 39,000 stations.

The commission states that the fact that the prevailing rates for extension sets throughout the United States are as high or higher than those charged by New England company, while deserving of consideration, is not convincing evidence that no reduction ought to be made. In the New York case, it is pointed out that no distinction was made between measured and flat-rate service in connection with the extension sets, while much stress was laid upon the increase in traffic caused by the installation of extension sets.

The analysis which the Massachusetts commission made as

to costs was sufficient for it to definitely conclude that the present rates for extension telephones are a source, on the whole, of a large profit to the company and that this is especially true in connection with measured service. In measured service, the commission reasons, the message rates are adjusted so that the subscriber, if he increases the number of calls, compensates the company for any increased expense involved and so far as traffic costs are concerned, it can make no conceivable difference to the company whether the additional calls are made through an extension telephone or through a main telephone. It is impossible to use both of the instruments at the same time and therefore, while the extension telephone adds to the convenience, it does not, strictly speaking, add to the subscriber's service.

These and other considerations entering into the reasons why the Massachusetts commission believes the existing rates for extension sets are unduly high, are given in the ruling which appears on other pages of this issue.

Factors Tending Towards "The Revival of Business"

One of a Monthly Series of Articles Written with a View of Helping Readers to Think, by Supplying Fundamental Information Rather Than Conclusions—Salient Features Bearing Directly Upon Economic Position of this Country—Why Prosperity Will Continue

By Frank M. Huston,
Financial Editor, Chicago Evening Post—Editor, Rand McNally Bankers' Monthly.

With unprecedented activity in nearly all lines of industry related to the metal trade, and with profits accumulating in an unprecedented manner and an enormous distribution in the form of wages, it is not surprising that this country should be speeding ahead along the highway of prosperity. The effect of the wide distribution of wages is already being realized, for this touches every line of industry by increasing the buying power of the wage earner.

Just now we are entering a new stage in our progress toward prosperity. The accumulations of profits from the steel mills and from the copper mines and allied industries, are mounting up so fast that the time is not far distant when plans for their employment will be given serious consideration. This means an additional distribution of wages and of money for the purchase of materials. Should the war continue another year, these considerations will be changed into a realization through heavy expenditures in plant extensions and the additional employment of men.

Already the United States Steel Corporation and the independent mills are putting their plans in force. It is estimated that upwards of $100,000,000 will be expended in increasing the capacity of the steel mills of this country. Between $50,000,000 and $60,000,000 has already been appropriated for that purpose by the United States Steel Corporation, of which $25,000,000 is expended at Gary in the new Indiana Steel Co. plant. This appropriation is to be taken out of earnings. It will thus be seen that the process is one of the distribution of the profits coming from the war business and the domestic business that has sprung up in this country in the last year, rather than out of new capital enticed from the hoardings of the thrifty.

In the copper industry, the situation is equally favorable. Millions of dollars are being distributed as dividends and extra dividends. This goes to stockholders scattered all over the country and is an additional incentive and inspiration to broader and greater things. The Wall Street Journal recently estimated the gross war orders for 42 companies since the middle of 1914, at $2,000,000,000, and 26 of these concerns aggregate $1,737,000,000. It estimates that net profits on war orders run between 25 and 50 per cent. In addition to the money that has been distributed through dividends, there has been an enhancement in market price of $919,323,000 on the outstanding securities of these 26 companies, or 71 per cent. This, if realized on, means a wider distribution of profits from the war; if continued as an investment, it means increased credit available to the holders.

Thus it will be seen that we are now beginning to reap the direct benefits in a substantial way, that have accrued us through Europe's misfortune. Many corporations and business concerns which were struggling along to meet their obligations before the war began, have been lifted out of their financial straits and placed upon a sound foundation.

Of course this has not taken place without the usual attendant inflation, which has been augmented to a very considerable degree by the change in our banking system. Nevertheless the ultra conservatism of our bankers, due no doubt to the uncertainty as to the ultimate effect of the change in our banking system, has held in check much of that wild speculation that has been experienced in former times of a sudden outburst of industrial activity.

With the prospects fair for a substantial agricultural production and with a very large "carry-over" from last year's unprecedented crop, there is no reason to look forward to anything but a continuation of favorable business for a considerable time at least. Money is plentiful and rates are low. The business man who proceeds cautiously but relies on his courage to take care of the demand already in sight, has every assurance of success in his enterprise.

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Reduction in Extension Telephone Rate in Massachusetts

After an Extended Investigation of Extension Telephone Service, the Massachusetts Public Service Commission Has Handed Down Its Ruling Reducing the Rate for Measured Service Extension Sets from $6 to $4 on System of New England T. & T. Co.

The Massachusetts Public Service Commission has issued an order reducing the rate for measured service extension telephone sets from $6 to $4 per year, on the system of the New England Telephone & Telegraph Co. within the state. The reduction follows extended hearings, which were reported in TELEPHONY of January 8 and February 5, and the investigation was held upon the commission's own motion. The reduction does not apply to instruments used in connection with private branch exchanges. About 39,000 extension sets are affected.

In reviewing the evidence the commission says it appears that the commissions of several other states have approved general rate schedules containing rates of $6 or more per year for extension sets but it does not appear that in such cases the extension set rates were given any special consideration. In a recent case before the New York Public Service Commission, decided June 9, 1915, the complaint of an individual against a charge of $6 per year was dismissed. In a similar case before the Nevada Railroad Commission, decided four days later, the charge was reduced from $12 to $6 per year.

NEW ENGLAND COMPANY'S ESTIMATE OF COSTS.

The decision analyzes the details of the New England company's estimate, which were published in the previous issues mentioned. The board doubts the propriety of including an 80-cent working capital charge and a supply and general equipment charge of 11 cents per extension set in the investment tabulation, pointing out that the company's accumulated surplus of $3,645,246 seems sufficient to provide all the working capital needed. Certain funds are also directly provided by the subscribers through advance payments. The cost of apparatus and installation expense figures have in some measure been checked by the commission's telephone department through an independent examination of working papers, and seem, on the whole, fairly to represent average conditions. The report says, however, that the value of the figures is impaired by the fact that the apparatus is not purchased in the open market, but under an exclusive Western Electric contract.

In estimating the annual expense per extension telephone, the New England company thought it necessary to determine the portion of the American Telephone & Telegraph instrument rental ascribable to the receiver, transmitter and induction coil of each set. It endeavored to do this by estimating what it would have paid in interest, taxes, depreciation and maintenance each year if it had bought these parts outright. Later in the proceedings Independent manufacturers testified under oath as to the cost of similar parts of their own make which they claim are equal or superior to those used on the New England company instruments. The company's figures totaled $2.985, and the Independent cost, which did not include profit, came to $1.55. The commission holds that even allowing for the profit, the discrepancy is still great.

In estimating the annual expense ascribable to an extension telephone (totaling $6.89, as figured by the company) a 7 per cent. return on the investment was allowed. The company assumed that the items of station repairs, removals and change of stations—including, apparently, all wiring and fixtures, both inside and outside, up to the point of connection with the street lines—are as great in the case of an extension station as for a main station. This assumption was not supported by concrete evidence, and is, in the commission's belief, unwarranted.

The working papers of the company fail to distinguish between main and extension stations, and to determine the relative costs and expenses with anything like accuracy would require prolonged examination of books and records and perhaps the making of new records.

The telephone department of the board estimates that the cost of main telephone installations is, on the whole, probably twice as great as the average cost of extension telephones, and that the expense of routine repairs, removals and changes must vary in like proportion.

How far the 10 per cent. depreciation charge is correct is also questioned. The commission is informed that in Chicago a life of 15 years was evidenced, and states that the large annual depreciation charge made by the New England company—amounting last year to $3,890,102, or about 30 per cent. of the operating expense—deserves consideration. The next item set forth by the company consisted of 7 per cent. interest, 10 per cent. depreciation and 1.7 per cent. taxes upon the estimate ($2.985), of what the receivers, transmitters and coils used in the extension sets would have cost, if they had been purchased outright instead of being leased, plus 20 per cent. for repairs. The commission holds that the latter amount is confessedly a mere guess, as the repairing is done by the lessor company. The whole computation of this item, is, in the board's opinion, fallacious.

Under the somewhat unusual system of leasing in vogue, the rental paid to the parent or lessor company is based, not upon the number of receivers, transmitters and coils supplied, but upon gross receipts. Extension sets can add to this rental charge only so far as they add to gross receipts. So long as the receipts are $6 per year per instrument, the entire rental charge ascribable to each instrument is but 4.5 per cent. of this sum, or 27 cents, and not the 75 cents (plus an additional amount reckoned under "Annual General Costs") which the company claims. If the yearly rate for the extension sets should be decreased the rental charge would be decreased in proportion.

ANNUAL TRAFFIC COST.

The company estimates that an extension set increases the normal number of calls 10 per cent. and that burdens the service and increases expense. The data upon which this estimate is based are not wholly convincing to the board, and it appears that in a similar study in New York state the percentage was fixed at 15. It is admitted by the company that it is unfair to include this apportionment of traffic expense in determining the rates to be charged for an extension set in the case of measured service. If a subscriber having such service exceeds, because he has an extension set, the number of calls to which he is entitled without extra charge, he pays for the excess at so much per call. There is not the slightest reason why he should make a further payment for these excess calls through the yearly charge for the extension set. In the cast of unlimited service, the company's argument is more reasonable.

The annual commercial costs (75 cents) include the cost (34 cents) of the directory which is supplied with every instrument, and an apportionment (amounting to 41

cents) of the expense of administration, revenue, accounting and collecting, canvassing and advertising and uncollectible accounts. The apportionment is made in the ratio of the revenue received per extension set to the total operating revenue. Such an apportionment is purely arbitrary, and involves reasoning in a circle. Under the theory followed, if the yearly charge for an extension set should be reduced, the expense would be correspondingly reduced. Furthermore, as a practical matter, there seems no very clear reason why the installation of extension sets should add to the items of expense which are so apportioned.

The annual general costs (34 cents) include all expenses not directly chargeable either to the plant, traffic or commercial departments, and include the expenses of all general offices, accidents and damages, pensions, etc., as well as, to use the company's words, "the payment to the American Telephone & Telegraph Co. for all services and equipment, less the amount deducted for equipment (i. e., receivers, transmitters and coils) at 75 cents per set." The apportionment is made as in the case of the commercial costs previously described. It has already been shown that the entire apportionment of the payment to the parent company which is chargeable to extension sets cannot be more, at the present rates, than 27 cents per set, and would be less if the rates were reduced. As for the other expenses covered by this item, of 34 cents the comments made in the case of commercial costs are equally applicable.

Return on the Investment.

The return on the investment (55 cents) is not strictly an expense, but a profit. It is figured at 7 per cent. on the total estimated investment of $7.92 per extension set, including the apportionment of working capital and making no allowance for depreciation in the investment. What it involves is indicated roughly by the following computation: The total investment of the company in fixed capital (not including the investment in securities of other companies or deducting depreciation), plus the $2,000,000 allowance for working capital, as figured by the company, was $70,448,537.13 on June 30, 1915. A 7 per cent. return upon this investment would amount to $4,931,397.60. Adding the $275,702.78 of non-operating income during the year ended on that date and deducting *all* interest and rental charges, amounting to $902,157.71, leaves $4,304,942.67, or very nearly 10 per cent. upon the capital stock of $43,261,200.

In a note following this estimate of the annual expense per extension telephone, the company states that the amount "would be substantially increased by allotting to the extension set its proportionate share of the expense of general office building, central office buildings, switchboards, terminal rooms, etc. Upon examination it proved that the company meant, not the annual *expense* chargeable to these buildings, etc., but the *investment*. The *expense* has, it seems, been apportioned in the company's estimate of extension set expense. In other words, the argument is that the investment per extension set, which is estimated at $7.92, ought to be increased by an apportionment of the investment in office buildings, etc. While, if the theoretical apportionment of costs is to be carried to extreme limits, there may be some basis for this argument, as a practical matter there seems little reason to believe that the installation of extension sets actually necessitates any increase in the investment in such buildings. Moreover, the total amount involved, if reduced to terms of annual expense per extension set rate is says (Record, page 51):

The Rate Schedule As a Whole.

The company states that it does not base its rates upon cost alone, although cost is the controlling factor, but attempts to adjust its rate schedule, as a whole, to the general convenience of the community. Service is given to certain classes of subscribers at a loss, if we understand the claim correctly, upon the ground that it is of general advantage that such service should be supplied. Thus, service is given, it is said, to subscribers in rural communities at rates below the general level. The existing rate schedule, the company claims, has been very carefully worked out, and is "more proportionately balanced and better balanced far and away than it ever was before." It urges that no particular rate which does not stand out in some way as clearly unreasonable and unfair should be disturbed, except in connection with a general change. As for the extension set rate it says (Record page 51):

> Now if we had today—if there were available surplus revenue to make reductions in our rate schedule—we have in mind two places where, by all odds, any reductions, as we see it, should go. This should be one of the last places, as it seems to us, if there was any money available, to make any reductions in rates.

The New Bedford Situation.

The Automatic Telephone Co., of New Bedford, submitted evidence at the public hearings to show that the telephone instruments which it uses, because of the automatic device, cost very much more than the ordinary instrument used by the New England company. It was stated that the automatic instruments cost $12.50 apiece, exclusive of any wiring, attached fixtures or installation expense, and this was offered as a reason why the rates of this company for extension sets ought not to be reduced. It should also be noted that the rates are based upon unlimited service; it has no measured service. No subscriber of this company appeared at the hearings to advocate any reduction.

Prevailing Rates for Extension Sets.

The fact that the prevailing rates for extension sets throughout the United States are as high as or higher than those charged by the New England Telephone & Telegraph Co., while deserving of consideration, is not convincing evidence that no reductions ought to be made. It does not appear that any particular investigation of these rates has been made by commissions of other states, except in the two instances already mentioned. In the Nevada case the rate was cut in two, as drastic a first step as could well be expected. In the New York case, an examination of the decision shows that the distinction between extension sets used in connection with measured service and those used in connection with unlimited service was not taken into consideration. Much stress was laid upon the increase in the normal number of calls caused by extension sets.

With respect to the question of cost, the commission has not thought it advisable, in view of the possibility of a general telephone inquiry in the near future, to undertake at this time any very detailed analysis of the figures submitted. The analysis which the commission has made, however, is sufficient to lead it very definitely to the conclusion that the present rates for extension telephones are a source, upon the whole, of large profit to the company; and this is especially true of such telephones when used in connection with measured service.

The figures submitted, both those representing investment and those representing annual expense, are considerably higher, in the judgment of the commission, than the facts justify. Even if all other figures should be accepted—and many of them are open to question—the unwarranted inclusion of traffic costs in the case of measured service accounts for an excess of the estimate above the real expense of slightly more than $2 per year.

It is important in this connection to have a clear under-

standing of the function of an extension telephone. While it adds to the convenience of a subscriber, it does not, strictly speaking, add to his service. The extension set supplies an additional mouthpiece to a subscriber's trunk line, but the number of messages which it is possible for him to send or receive is not thereby increased.

MEASURED AND UNLIMITED SERVICE CONSIDERATIONS.

In the case of measured service the message rates are adjusted, we assume, so that a subscriber, if he increases the number of his calls, compensates the company (by the additional revenue which he pays) for any increased expense involved. So far as traffic costs are concerned, it can make no conceivable difference to the company whether the additional calls are made through an extension telephone or through a main telephone. The two instruments afford alternative entrances to the trunk line, and it is impossible to use both of them at the same time.

In the case of unlimited service, where no additional charge is made for additional calls, it is perhaps reasonable to assume that the service rate is adjusted to the normal use of a single instrument, and that the charge for an extension set should include some compensation for the additional burden which such an instrument may impose upon traffic.

In considering telephone rates there is, furthermore, another fact to be taken into consideration which has not, so far, been mentioned at all. Extension sets are, from one point of view, a distinct advantage to the service, and tend, in an important respect, to decrease expense. This is illustrated by the statement made by counsel for the company at the public hearing, as follows (record, page 74):

I think it is a mighty good thing for the company to have extension sets. Somebody mentioned that this morning, and I thought the point was well taken. It does, to a certain extent, release the line from being tied up so much; it enables the calls to be answered more promptly and the line to be released quicker.

In view of the fact that the company is endeavoring in every way, from motives of economy and efficiency, to expedite the service and to save fractions of seconds, even, in the handling of calls, this effect upon service is of no small consequence, and tends to offset any increased expense which extension sets may impose in other ways upon the company. It is, we believe, to the advantage of the company to encourage their use, both in offices, and in residences.

In arriving at its conclusions in this matter, the commission has been influenced by the fact that it has recommended a general inquiry into the whole telephone situation (third annual report, pages 28, 29 and 32) and that the present general court may authorize such an inquiry and provide adequate funds therefor.

As shown above, in the consideration of extension telephone rates several matters of general significance are involved, such as the relations of the New England Telephone & Telegraph Co. to the Western Electric Co. and to its parent company, the American Telephone & Telegraph Co., the investigation of which could be made to better advantage in connection with such a general inquiry. The commission also recognizes the weight of the argument made by the company, that no particular rate ought to be disturbed in advance of an investigation of the rate schedule as a whole, if one is to be made.

Under the circumstances, and until it is known whether or not the commission is to be placed in a position where it can undertake such an investigation, it is disposed to agree with the company, that no very radical change in any particular rate ought to be required and no change at all unless the reasons are very clear and strong. Applying this principle, there seems to be no sufficient reason at the present time for ordering or recommending a change in the charges for extension telephones used in connection with unlimited service, although it may ultimately prove that a reduction in these rates is just and reasonable.

Nor does the commission feel that it is expedient, at the present time, to require a change in the charges for extension telephones used in connection with private branch exchanges, even where the service is measured. If the company's contention is sound—that there are cases where it is desirable in the public interest to conduct certain branches of the service at less than cost—it may also be argued with some force, we are inclined to believe, that subscribers who use private branch exchanges are as well situated as any class of subscribers to carry, at least, a portion of the burden. In general, they are, it seems, the subscribers who secure the maximum benefit from widespread telephone connections. At all events, the status of private branch exchange subscribers, and the principles which ought to influence their rates, may well be left for consideration in connection with a general telephone inquiry.

When it comes, however, to extension telephones used in connection with measured service by the smaller subscribers, who do not have private branch exchanges, while the commission does not think it desirable at this time to attempt to reduce the charge to the basis of exact cost, it does feel that the evidence is very clear and strong that the present rate is unreasonably high, and that the company ought to be required to make some reduction at the present time, in advance, even, of any general inquiry into the rate schedule as a whole. There can be no doubt whatever, we believe, that a rate of $4 per year per instrument would yield ample profit to the company. The commission is also of the opinion that such a change could in no way prejudice a future readjustment of the entire rate schedule, but would, indeed, operate to the advantage not only of subscribers, but of the company itself.

The commission has, therefore, issued an order directing the New England Telephone & Telegraph Co. to reduce the present charge for extension telephones used in connection with measured service by subscribers who do not have private branch exchanges from $6 to $4 per year.

In the case of the other companies operating in the commonwealth, which, with the exception of the Automatic Telephone Co., of New Bedford, are all very small, it appears that the service is in every case unlimited. The commission, therefore, for the reasons given above, recommends no change at the present time in their charges for extension telephones. In the case of the Automatic Telephone Co., of New Bedford, it also seems to be the fact that the instruments used by this company cost considerably more both to install and to repair than the ordinary instruments.

Initial Issue of "The Mouth Piece."

The first issue of "The Mouth Piece," which is to be published monthly by the Consolidated Telephone Co., of Hazleton, Pa., has just come into the office. The object of this house organ is to advance the interests of the company and its employes and it aims to be the "mouth-piece" of the company and its employes.

The March issue contains eight pages of interesting news items regarding the company's activities in its various exchanges, a condensed report of what has been accomplished during the past year, several articles by employes of the company, etc. Another feature is a department of suggestions for improving the company's service, prizes being offered at the close of the year to those employes sending in the largest number of accepted suggestions. H. H. Weibel, 110 North Seventh Street, Allentown, Pa., is the editor.

New Corporation to Succeed the Los Angeles Companies

A Third Organization to Take Over Los Angeles Telephone Properties—Interchange of Service Vetoed by Both Independent and Bell Companies—Plan Impractical on Account of Too Great Expense—Minor Details of Merger Yet to be Arranged

An agreement was reached March 23, between officials of the Home Telephone & Telegraph Co., of Los Angeles, Cal., and the Pacific Telephone & Telegraph Co., whereby their aggregate assets of approximately $16,000,000 are to come under one corporation, and it is stated that Los Angeles will have a single telephone system before the year is out. About 125,000 telephones are now in operation.

The franchise of the Pacific company expires November 16 next. As there was to be no re-grant of the franchise, except on the basis of interchange of service, or a single system, it was imperative that the company either merge, buy, or sell, to stay in the field. Both companies vetoed an interchange-of-service plan as entailing too great expense, and decided that a third company shall be formed to take over the Home and the Pacific, or Sunset, systems.

Interchange, it is declared by the management of both companies, was found to be impracticable. The cost of installing a toll system to make this effective would be between $2,000,000 and $3,000,000, according to the estimate of Engineer Barker, of the Board of Public Utilities. This additional expense, it is stated, would have increased the rates considerably.

It was announced by the Home company management that there had been no sale to the Bell. The new company, it is stated, will give the people the advantage of local direction and investment, as well as the consolidated service that can come only through the amalgamation of the properties.

Permission to carry out this plan must first be obtained from the state railroad commission, and also from the United States Department of Justice, in accordance with the Bell commitment.

The agitation for a single telephone service began several years ago, and at periods during the last two or three years it has become acute. Last year the people took a straw vote on the question:

"Resolved, That the city council shall not grant a new franchise to the Pacific Telephone & Telegraph Co. unless an interchange of telephone service shall be assured."

This carried by an overwhelming majority, and served notice upon the Pacific company that it must either go out of business upon the expiration of its franchise, or make some deal with the Home which would harmonize with the spirit of the popular vote.

The fact that the union has not been consummated causes telephone officials to discuss the plan guardedly. This does not mean, however, that any question exists in their minds as to the deal going through. Unofficially it is admitted that the agreement to merge has been conclusively ratified.

Final action upon the proposal to merge was taken March 23 by the directors of the Home company. After the meeting President A. B. Cass of the Home telephone company issued the following statement:

For some time past the Home Telephone & Telegraph Co. has recognized the public demand for complete interchange of telephone service in the city of Los Angeles. The company's officers and engineers have made exhaustive studies of possible plans for continuing two separate telephone systems and furnishing interchange of service through a toll system, operated either by the two companies or by some third organization.

All of these plants require the installation of a toll system similar to the present long distance systems connecting Los Angeles with outside cities. Because of the vast number of messages to be handled, this system would require a great number of interconnecting lines and a very elaborate equipment for making the connections and recording the charges. The service would necessarily be slow, being in effect similar to long distance service, and the quality of the service would be exceedingly difficult to maintain, as each connection must pass through the lines of two companies besides the interchange equipment.

In addition to these objections would be the burden of the toll charge itself, which, as the two companies have approximately the same number of subscribers, would apply on a large proposition of all connections within the city.

Considering all of these objections, the management of the Home Telephone & Telegraph Co. has become convinced that a satisfactory interchange of local telephone service at a reasonable cost can only be obtained by consolidating the two existing systems.

The directors of the company, at their meeting this afternoon, after fully considering all the questions involved, have authorized the management to endeavor, in conjunction with the management of the Pacific Telephone & Telegraph Co., to work out a plan for consolidation that will meet the demand of the public and the approval of the public authorities.

The management of the Pacific Telephone & Telegraph Co. has signified its readiness to assist in formulating such a plan. As the plan is formulated, it will be submitted to the public authorities. It is quite probable that the problem may be best solved by the organization of a new local company to take over the two systems in Los Angeles city, payment being made for the properties in the securities of the new company.

The statement of C. F. Mason, superintendent of the Pacific company in Southern California, is, in effect, the same as that of Mr. Cass. He said:

Interchange is not the answer to the telephone problem and I believe the consolidation of the two systems to be the most practical way to handle the situation if it can be worked out to the benefit of both companies and the people.

Our company stands willing to enter into the necessary negotiations to bring this about. The details, of course, will take some time to formulate, for, at the present, it is impossible to state what the final answer to the various problems can be.

The considerations still to be discussed between the companies are admittedly of two characters, mechanical and financial. Which telephone shall prevail? What are the assets of the respective properties?

While the public may be interested in the determination of the former question, the latter concerns only the companies, as regards the present negotiations.

The probable effect upon rates was stated by a high official of the Pacific company to be as follows:

The number of telephones in a business house will be substantially reduced. The rate of the new service will be somewhat greater than on either service now, but the general effect of the one service will be to reduce rates for business houses. The same is true as to residences which have two telephones.

There will probably be an increase in rate to the subscriber with one telephone. He will have twice as many connections as at present, and the enlarged service will more than justify the additional cost.

The rate, to be fixed by the state railroad commission, will be governed, as a matter of course, by the factors of investment and a fair profit. Although the investment of the new company will be practically twice that of either of the present companies, the number of subscribers will also be about twice as great. Only a slight increase in the

rate may be necessary to afford the company a fair return.

The physical valuation of the Home company is said to be about $8,000,000, and that of the Pacific is about the same.

Similar mergers have been carried out in other Southern California cities, notably Pasadena, Santa Barbara, Ontario and Upland. In each of these instances a third company purchased the two existing ones.

Engineers' Welfare Organization Making Good.

Good engineers are needed by the co-operative service clearing house of the American Association of Engineers, 29 La Salle street, Chicago, to fill positions that are referred to it by employers in all parts of the United States. Business is being done, it is stated, on a large scale by this association, which started in September, 1915. At present there are 400 certified members. An additional 150 engineers have made applications and are being transferred to the certified class as fast as their qualifications can be verified.

From March 1 to March 25 the association filled 15 positions and had 50 open positions reported to it. The positions on the unfilled list range from $1,200 to $5,000 per year, and some of them have been open for several days, because the list of engineers on file desiring positions is very limited. If engineers knew of the benefits they could confer upon their profession, as well as gain in a personal way from this great movement of co-operation, it is believed that the list would soon be filled with progressive engineers of high qualifications, who would advance and co-operate with the American Association of Engineers.

The association tries to discourage its members from changing positions, unless obviously they are underpaid, or unless they are better fitted for work other than that on which they are engaged. Unnecessary changes are expensive in time and money, both to employer and employe.

Fremont (Ohio) Company Purchases New Home.

A deal was recently consummated whereby the Fremont (Ohio) Home Telephone Co. purchased the John Horn homestead, a three-story brick structure, with a frontage of 85 feet on Croghan Street, and 140 Wayne Street. The consideration mentioned in the deed for the property, is $7,500.

The company expects to expend $50,000 in the installation of modern and up-to-date equipment in the new building. While the company assumes immediate possession of the property, it will not be until late in the summer before actual reconstruction work is begun and the new exchange will not be ready for occupancy until some time late in 1917.

A Salt-Water Tale

Steamers—Wireless Telegraph—Telephones

By J. C. Kelsey

As I write I am on the Yale. The Yale is a steamship—a fast one. It was built by a man by the name of Morse, who went to prison for alleged financial misdeeds—no Wall Street financing can be crooked otherwise than alleged.

However, the Wall Street man did not die in prison. He was let out to die, because a president pitied his prison pallor and emaciation. He did not die, because prison pallor and emaciation can come from eating soap, and possibly the builder of the Yale discovered the yeggman's secret of simulated consumption.

The boat is equipped as if a submarine was to be met every hour. It has wireless apparatus, of course, and I was astonished to find telephones of Independent make all over the boat. From curiosity, I sent a wireless message, and learned that each word, initial and letter of both address and signature, cost 13 cents.

One can run up a big bill in wireless telegraphy by merely writing his name. Some of our telephone subscribers should be induced to patronize this luxury of wireless telegraphy, so that they would have a better appreciation of the bargain they now have in telephone service.

We are just passing the exposition grounds at San Francisco. The 100,000 jewels of that famous Tower of Jewels have been sold at one dollar each. The buildings stand deserted—a monument to fleeting time, as well as a very human tendency to play with new toys and then easily tire of them—even so far as to break them up, as well as to forget them. Possibly the exposition paid for itself. It really returned San Francisco to the map, when it was really being forgotten.

Did it ever occur to you that this great shipping point has but one railroad—the great Southern Pacific? True enough, the Santa Fe reaches San Francisco, but it is over Southern Pacific tracks a considerable part of the way.

The Western Pacific also reaches the city, but the Gould railroad is in the throes of a receivership, and is of little value to anyone today. This receivership offers the unparalleled spectacle of a judge quarreling with the receivers he appointed over the matter of reorganization.

San Francisco is the home of the California Railroad Commission. The manner in which this really great commission operates, reminds one of the origin of commission rule.

It dates back to King Solomon. Two women disputed over the possession of a baby. Both vehemently claimed it and put forward every argument and proof of ownership. They had King Solomon up a stump, as the saying goes, and he was about to turn the case over to the courts.

In legal life, that case would have lasted long after the baby had outgrown his real, as well as pretended mother. It was a great chance for the lawyers to occupy all of Solomon's time with denials, demurrers and other legal weapons uncountable. But King Solomon had other duties, for history says he built a temple, as well as homes for his 300 wives.

He had no time for legal quibbles, and he dealt the legal profession one of its hardest blows. He merely picked up the baby and proceeded to draw his sword for the purpose of giving each of the mothers her half of the disputed property. As you know, the natural mother begged for the life of the child and offered to surrender it to the pretended mother. Wise old King Solomon needed no further proof, and he settled the baby case then and there.

Commissions are the culmination of a desire on the part of people to get away from the slow-grinding mills constructed by lawyers. Commissions contemplate speed and justice in combination, a desire to weigh the fundamentals of a case—the real essentials of it if you please—and to skim off the unimportant froth so frequently indulged in by our courts. Commission ways seem harsh at times. We

often accuse them of political tendencies, but no great reform is free from its critics, especially if it does anything at all.

State commissions generally combine speed, common sense and justice, and it is safe to say that if a corporation has facts and truths in its favor, neither corporation nor public need worry over the findings of these quick-firing bodies.

The California commission is literally working itself to death. For instance, the entire body had a hearing at Los Angeles on Monday, San Diego on Tuesday, Santa Barbara on Wednesday, Fresno on Thursday and all members were in San Francisco early to begin a Friday hearing. Further, between eight and ten o'clock each commissioner listened patiently to one or two cases—informal, of course, but preparatory to formal work a few days ahead.

Any man who has an ambition to live long and take life easy, had better resolve, today, to seek no appointment to a typical and energetic board of public utility commissioners. He had better stay off the bench of this great American shirt-sleeve court unless he wants to work day and night.

We live in an age of new things. We realize it as we see the aeroplane overhead, hear the crackling of the wireless, and talk across the continent. We realize it more when we think that the first railroad reached the Golden Gate country in 1869.

Prior to that time, men scaled perilous passes or went around the Horn in small and uncomfortable vessels. Almost every hill has a cross which commmemorates the burial place of a soldier, settler, or delicate girl, all seeking new homes and willing to undergo privation and peril which no man of 1916 can ever realize.

We, at least, have a wonderful heritage, one not too far back to be valuable to us, because it comes within that biblical third or fourth generation.

The Palace Hotel is the great landmark of San Francisco. It is hard to believe that this great hotel once stood close to the water front. It was built by men, fabulously rich and enriched by a liberal government, at that.

These men sent experts all over the world to gather plans for a hotel worthy of the name. It became the first reinforced concrete building in existence, because all the iron scrap of the railroad builders, mixed with cement, went into its walls.

No hotel registry records so many distinguished guests—even the present fugitive king of Belgium records the greatest time of his life in and out of the great Palace.

As with all things, when the winds blew, the rains beat, the earth shook and the flames spread, this reinforced concrete building—built by mere men to withstand the assaults of decay—simply melted before the advance of its natural enemies.

No human creation can stand before the rage of Nature, nor withstand the slow and almost secret process of daily decay. No human being, for that matter, has any better chance in resisting natural or economic laws.

Everything must change, decay, rust and die. Yet we have all heard it said that there is no such thing as depreciation. Everything must pay its way or go down to destruction. No human agency has the patience, as well as the power, to give life and strength beyond natural means. Some nations even go so far as to leave the weak to die. What chance has a stockholder of a weak property?

The conditions of our telephone existence are parallel to the survival of the fit theory. A telephone company must pay its way or be deserted by its security holders. If a community can show no profit on telephone operation, one may be sure that there will be few enthusiastic security holders in that community.

The slightest opportunity given to stockholders to escape a loss will not be overlooked. One can appeal to the government or to Providence, even, to stop the sale, but the pardon comes too late, as the song goes.

The time to act is long before the deed takes place. That is what I have been driving at for years—to make telephone men realize the opportunities under their feet, instead of dreaming of what they would do with the money after they have sold.

It is human nature for every man to want to see his money occasionally. Often a man comes to a bank to draw his money out merely to see it for a moment and return it.

All telephone companies have stockholders who have put money into our business. They are human and would like to see their money occasionally. If the stock is valuable, a stockholder could sell it to his neighbor and would buy it back again. In other words, the telephone man must make his securities negotiable and there will never be a sell out sign on the door.

From a distance comes news of the Buffalo deal, with its usual agitation. It seems to me, riding peacefully over the waters of the blue Pacific, that we have ever had something to agitate us.

Years ago the Kellogg deal agitated the whole field continuously. We were terribly excited by the Morgan deal and it seemed for the moment that the earth had dropped from under our feet. But we awakened in the morning as from a bad dream and lived serenely on.

The Blackstone meeting, followed by the Woods and Gary deals, worried us some more. Still we lived serenely on and nobody lost their lives or property. Now Buffalo looms up to harass us, but at this distance I can see little to worry about. It is well to warn you that this will not be the last, and we may as well steel ourselves to other changes in the telephone situation.

As I write, I hear the wireless calling. It may be that I may have to send a call for help for treading on dangerous ground. But I am going to rush right in and repeat that the telephone is a local issue. There never was a greater local issue than the Buffalo property.

It had its own factory and it never gave its details to the world for its information. Its removal from our midst will hurt no one now, because the damage has already been done. If it can leave us without doing damage to its immediate neighbors, its demise cannot cause general sorrow.

The telephone is a local issue. I have noticed for years that a telephone man holds views entirely according to his local needs. Men have changed their views over night, simply because economic needs have demanded it.

We have many ludicrous situations, and have had many a laugh over the acrobatic tendencies of our business. There was a time when a martyr could wear his crown with satisfaction, but a practical, cruel world has no time to admire such folly now.

As telephone men we must face natural changes with some equanimity. We must not forget that, while some of our Independent telephone properties are going over, some of the Bell property is coming over.

We must not pay so much attention to the one lost sheep, and forget the faithful 99 who are still with us. We must not believe that Bell ways have divine guidance—they still can make human mistakes. They will make one

great mistake if they go much farther in the absorption of properties. The charge of monopoly is still a serious one to answer.

Every man has as good a guess at the trend of affairs as any high-priced Bell official. High salaries do not indicate genius. Sometimes it indicates things to which ugly words might be applied. Uneasy lies the head that wears a corporate salary crown anyway.

After all these years, I have yet to see an act or to hear a word of wisdom that brands any of them above the average of men. When it comes to looking wise or making vague promises, any one of them can earn his salary twice over. Strange to say, however, nobody is deceived thereby, unless he is without the power of thought.

I fail to see why some prophet has not emulated Joseph Smith, and brought out a "Book of Bell" from New York or the Massachusetts hills. It seems to be the only missing link in their chain of confidence in their greatness.

I have a letter from an employe of a company recently passing under Bell control and still posing as an Independent telephone company. It calls to mind an oft-repeated statement that the Bell interests would rather sell a telephone or a switchboard to an Independent than to control the earth.

"I have been forbidden to solicit business for Independent telephone manufacturers. I cannot do anything now but to notify the Western Electric salesman."

As you know, the Bell company deliberately and shamelessly flaunts before the world a lot of business outlawry which shames the dark ages. This device is the Western Electric-Bell contract which gives the factory a monopoly of $60,000,000 worth of business, and an opportunity to wring about $4,000,000 from Independent telephone manufacturers which rightfully belong to them.

In all industrial history—and it has a long story of rapine, arson and murder—there is no parallel to this industrial monster which runs amuck in the telephone world.

The Bell interests have made use of banks, financial houses, lodges, fraternity brothers, and force to sell switchboards at cost. There is no mystery regarding this activity. It has but one purpose—that of wrecking the Independent telephone manufacturer.

Surely the Independent telephone manufacturer will not sit supinely by without challenging this condition. A slave accepts his stripes as a matter of course, but a freeman will resent them as long as his heart beats or a dollar exists in his pocket. If we are to be men at all, we must strike hard at this modern atrocity.

Again I hear the wireless calling over the long stretch of salt water. You hear me calling over the same stretch of ocean blue, beseeching you to prepare for the contest yet to come, a life and death matter to all of us.

MORAL: It is time to dump some tea in the industrial harbor.

New Exchange to be Erected at Huntington, L. I., N. Y.

The New York Telephone Co. has completed plans for the erection of a new two-story exchange building at Huntington, Long Island, N. Y. The building will have a frontage of 60 feet and the depth will be of the same dimensions. The foundation will be built to allow for an extension at the rear and the addition of a third story when such enlargements become necessary. Work will be commenced very shortly and it is expected that the building will be ready for occupancy by November, 1916.

Telephone and Child Prevent Disastrous Fire.

A telephone and a five-year-old baby girl of unusual forethought and intelligence prevented a disastrous fire at Lindsey, Ohio, recently. A new Evangelical church had recently been completed, and there was considerable excitement in the village when it became known that the new church was on fire. While older persons were watching the fire and others making futile attempts with a bucket brigade, the five-year-old daughter of Fred Magsig, former mayor of Lindsey, climbed on a chair, put in a telephone call for Elmore and told the fire department there: "Our church is burning. Come and help put out the fire." Fifteen firemen responded, and a much greater disaster was prevented by the timely thought of the little girl, aided by the telephone.

Wisconsin Telephone Co. Pays Taxes for 1915.

A total tax of $225,594 on its gross income for 1915 has been paid by the Wisconsin Telephone Co. Of this amount $78,607 was turned over to the state and $146,987 to the towns, cities and villages in which the exchanges are located.

Milwaukee's share in the distribution is greatest, being $70,064. Madison is next with $7,169. Then comes Racine with $5,672.

The Wisconsin company paid, last year $73,866 to the state, so that the present tax is $4,741.26 greater.

Telephone, a Factor in Submarine Safety Device.

The telephone is to be used to protect the crew of a submarine if a device invented by William Kirkland and William Herbert, of the Mare Island navy yards, San Francisco, Cal., proves successful.

The device consists of buoys carrying heavy cables and a telephone line, which are released by water pressure. Should a submarine sink too far, or become unmanageable, at once the buoys will be released, rise to the surface and "mark" its location. The telephone permits the crew to state the trouble, and the cables will permit the submarine vessel being hauled up by the parent ship.

Belle Plaine, Minn., Has Common Battery Service.

The Citizens Home Telephone Co., of Belle Plaine, Minn., has completed cutting over its subscribers' lines to its new common battery plant without any interruption in the service. The equipment installed is of Garford manufacture. The storage batteries are charged from the local electric light plant, the current passing through a rectifier, which changes it to a direct current of 24 volts. This current is also used for ringing by converting it to a 20-cycle alternating current.

Use of Telephone to Further "Go-to-Church" Campaign.

A novel plan was adopted by representatives of the various churches in Fargo, N. D., to carry out their "Go-to-Church" campaign. Arrangements were made whereby every telephone subscriber was called upon by telephone and a personal invitation extended to attend the church of his choice, the following Sunday. Starting at about 2:30 on Saturday afternoon, a committee of 45 men called every telephone subscriber in the city and invited him to church the following Sunday.

Plan to String All Utility Wires on Same Poles.

Under a plan projected by transmission engineers named by the telephone, telegraph, light and power interests of Connecticut, about 500,000 wooden poles throughout the state will be eliminated by the joint use of poles. The approval of the public utilities commission is being sought before the actual work of carrying out the plan can be started.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

346. How is the battery energization circuit of the cut-off relay completed? How is it obtained?

347. What is necessary in the cut-off relay winding when the supervisory lamp is inserted directly in the circuit? Give an illustration to make this clear.

348. State the purposes of the three contact jack springs of the multiple jack circuit shown in Fig. 136. What is the general principle which applies in this and other circuits known as three-wire, multiple line circuits?

349. How are jack springs designated?

350. State some of the causes leading to the development of the two-wire multiple circuit.

351. What is a difference as regards the cut-off relay, between a three-wire and a two-wire circuit?

[EDITOR'S NOTE: Through an error in our drafting department, the series multiple in Fig. 135 is shown incorrectly and the correct arrangement is shown in Fig. 135-*A*. It will be noted that when the plug is inserted in any jack, it will cut off the signal or relay, *A*, while establishing, at the same time, its own connections with the two sides of the line to the telephone. In other words the insertion of the plug, by spreading the springs of the jack, will disconnect the signal from the line at contacts like *B* and *C* or *G* and *H* and will establish the connection between its own contacts with the contact springs connected to the two sides of the line circuit. This effect is secured regardless of the particular jack belonging to the line into which the plug may be inserted.]

CHAPTER XVI. The Typical Line Circuit (Continued).

352. *Dual function of the common battery line circuit.*—In section 339 "TELEPHONY's Home Study Course for Telephone Men," the function of the common battery circuit as a means of feeding battery to the telephone transmiter was discussed.

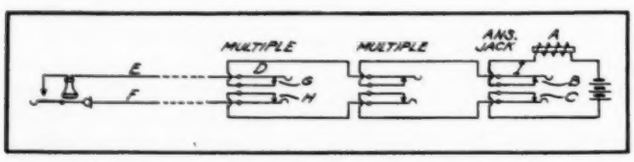


Fig. 135-A. Series Multiple Line Equipment.

It is important to remember that the common battery line circuit not only affords a path for the alternating voice currents, but that it conducts, at the same time, the direct current required for the operation of the telephone transmitter from the central office to the instrument.

So far as transmitting the alternating voice currents is concerned, the essential properties of the common battery line circuit are the same as the essential properties of the magneto line circuit. The simultaneous flow of direct current introduces, however, as has been shown, new requirements into the matter. It will be remembered that the common battery line circuit must not exceed a well defined resistance, since, by so doing the supply of current to the transmitter would be too much reduced. Loose and variable connections are more to be feared in the common battery circuit than in the line circuit for local battery service because of their noise producing effect.

The extra requirements of the line equipment for common battery service should not be overlooked in the study of the line circuit as different methods have been adopted by the different inventors to secure the desired results in their several systems.

353. *Supervision of the common battery line circuit.*—The detailed description of the methods of obtaining supervision over the connections on the common battery switchboard may well be left to the description of the various line and connecting cord circuits. The general principle which underlies all the various systems is the same.

When a common battery subscriber removes his receiver from the hook, the direct curent for the transmitter supply from the central office begins to flow over the line circuit. When the receiver is replaced on its hook at the end of the conversation, the direct current for the operation of the transmitter ceases to flow. In other words, there is a flow of direct current started *from the central office* when the telephone is placed in the operative condition. On this fact depends the method of supervising common battery connections in every common battery system.

354. *The importance of the battery feed.*—When it is realized that the supply of direct current for the operation of the transmitter must be sent out over the telephone line in order that the call may be successfully answered by the operator, it will be clear that the battery feed is one of the most important functions of the common battery cord equipment. One of the standard common battery, three-wire multiple line circuits was shown in Fig. 136. It has been stated that this same line circuit arrangement, except for the cut-off relay resistances, may be used with either two or three-wire cord equipments.

One of the standard arrangements when used with the three-wire cord circuit, is shown in Fig. 138. The line circuit to the telephone is represented at *K* and *L*. When the outside circuit between these two wires is completed by removal of the subscriber's receiver from its hook, the line relay *A* is energized and attracts its armature. This opens a path for

a flow of current through the line lamp, giving the signal to the operator.

355. *The path of the battery feed current.*—The path taken by the line-calling current is traceable from the negative pole of the exchange battery 1, to the line relay *A*, to the cut-off relay spring contact 5, to the ring side of the line 2, and then to the telephone. The current returns by the tip side of the line 3, through the cut-off relay spring contact 4, to the positive terminal, 6, of the common exchange battery. When the line signal is observed, the plug is inserted and the cut-off relay is energized over a circuit traceable as follows:

Starting at the negative pole, 1, of the common exchange battery, through the supervisory lamp *H*, the resistance *I* and the sleeves of the plug and jack to the winding of the cut-off relay *B*, then to the positive terminal, 6, of the common exchange battery. Only one common exchange battery is used. It is shown in two places for clearness. The operation of this line equipment is familiar, of course, to every telephone man.

The important point to be noted in the entire arrangement is that the supervisory lamp, *H*, is illuminated by current flowing *through* the winding of the cut-off relay *B*. Therefore a high resistance is not permissible in the cut-off relay winding since the lamp, *H*, requires a definite current strength. Other considerations, such as the busy test, require *some* resistance between the sleeve of the jack and the positive terminal of the exchange battery and this resistance must, in ordinary exchange subscriber circuits, be supplied by the cut-off relay winding.

356. *Operation of the supervisory lamp.*—The insertion of the answering plug *M* in the jack of the calling line in response to the calling signal, removes the line relay, *A*, from the line circuit by the operation of the cut-off relay *B*. At the same time it places the contacts of the plug in connection with the spring contacts of the jack so the tip of the plug is connected with the tip side, 3, of the line, while the ring contact of the plug is connected with the ring side, 2 of the line.

Since the receiver is still off the hook of the telephone set, the outside circuit between the two sides of the line is closed. A flow of current takes place, accordingly, from the negative terminal, 1, of the common exchange battery through the winding 12-13 of the repeating coil, *G*, through the supervisory relay, *C*, the ring side of the line 2, the telephone set, tip side of the line 3, the winding 10-11 of the repeating coil, *G*, to the positive terminal of the common exchange battery.

This flow of current through the winding of the supervisory relay, *C*, causes it to attract its armature and the contact at *O* is completed. There is, therefore, created at *O* an alternative path for the current flow from the common battery through the supervisory lamp *H*, and through the resistance *J*. It can be readily seen that if the resistance, *J*, is sufficiently low, the current will be largely diverted from the lamp *H*, causing it to become dark. At the same time the flow of current through the winding of the cut-off relay, *B*, is not reduced or interrupted.

With this type of cord equipment, the supervisory lamp is darkened by the shunting or robbing effect of a resistance placed in parallel with it. In other cord equipments it is darkened by the breaking of the circuit through which it is supplied with operating current. When the calling subscriber replaces his receiver on the telephone hook, the flow of current through the winding of the supervisory relay *C* is interrupted, the contact at *O* is broken, and the flow of operating current through the supervisory lamp *H* is restored by the

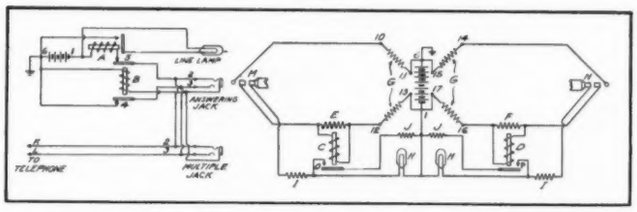


Fig. 138. Three-Wire Multiple with Three-Wire Repeating Coil Battery Feed Cord Circuit.

elimination of the shunt *J*, lighting the lamp and giving the operator the disconnect signal. The other end of the cord equipment is exactly the same in operation, so far as the supervisory lamp for the *called* subscriber is concerned.

(To be Continued.)

Seek Restoration of Reduced Night Rates in Texas.

That the traveling men of Texas will seek a reduction of long distance telephone rates in the state, and the restoration of the reduced night rates, is indicated by the action of various local posts of the organization of traveling men in instructing delegates to the state convention, to be held at Corpus Christi in May.

Following the abolition of night rates and the change from a two- to a three-minute initial period for toll calls, made by the Southwestern Telegraph & Telephone Co. in Texas in December, 1914, the organization of traveling men of the state endeavored to secure the passage of a bill in the state legislature to place telephone companies under the jurisdiction of the railroad commission, but the bill was defeated. It is now expected that the organized traveling men will take some similar action at the next legislature, which convenes early in 1917.

The Independent companies of the state, operating toll lines, have retained the two-minute initial period and the reduced night rate.

Granville (Ohio) to Have Automatic System.

At a recent meeting of the village council of Granville, Ohio, the Newark Telephone Co. was granted a new franchise for a period of 21 years, to take effect within 60 days, upon condition that the telephone company install an automatic telephone plant.

It is understood that plans are already under way for the installation of an automatic system in Granville which will not only include the telephones in the village but the rural telephones as well. In addition a number of improvements will be made to the outside plant, including a cable between Newark and Granville.

There are at present 425 telephones in service in Granville but C. E. Hollander, general manager of the Newark Telephone Co., states that with the installation of the new plant and the increase of cable facilities, he expects this number will be increased to 600 within a year after the improvements have been completed.

Orlando (Fla.) System Sold to Southern Bell.

The Orlando Telephone Co., of Orlando, Fla., has sold its entire system to the Southern Bell Telephone & Telegraph Co. The details of the transaction are being worked out and the Southern Bell will assume management of the properties shortly.

What the U. S. Association Does for the Local Company

Advantages of Membership in the United States Independent Telephone Association to the Local Company—Co-operation with National Legislature and Interstate Commerce Commission in Matters Affecting Telephone Companies—Service Department of the Association

By W. S. Vivian

Secretary-Treasurer, United States Independent Telephone Association.

With reference to the telephone field, someone said, "Co-operation, plus knowledge, plus efficiency, equals service"—co-operation being the foundation, knowledge and efficiency the pillars, and service, the roof of the telephone structure. Someone else states that there are approximately 20,000 telephone organizations in the United States, each so far as corporate relationship is concerned, independent of the others, and yet, because of the nature of their business, each dependent upon the other.

The United States Independent Telephone Association, because it is national in character, becomes the logical medium through which to disseminate knowledge, which, when applied by the local company, produces efficiency and profits. Co-operation of the local companies with the national organization, by becoming members and actively supporting it, enables it, in turn, to be of value to the local companies. But let us be specific: The association at the present time maintains two offices, one in Chicago and one in Washington, neither of which could be maintained were it not for the fact that the local companies scattered all over the country make it possible.

At the time this is written, the association has upwards of 400 members, scattered throughout 35 states of the Union. These are the companies that make it possible to maintain two offices.

Amendment to War Tax Bill.

Last year there were two national associations, likewise the year before. A bill was introduced in congress at Washington, commonly known as the war tax bill. The bill, as originally presented, provided that on all telephone and telegraph messages amounting to 15 cents or more, the telephone and telegraph companies originating them, should pay a tax of one cent to the government. This matter was called to the attention of both associations, who in turned called it to the attention of the state associations.

Each of the several state and national associations called it to the attention of their member companies, and the result was that this bill was amended so that the tax of one cent on each message should be paid by the patron. This is a mere bagatelle to the individual patron. It would have meant a great deal, however, to each of the local companies. This example of co-operation saved to the local telephone companies throughout our country approximately $800,000 during 1915. The tax has been continued to include 1916, which will mean an additional saving during the current year of approximately $800,000 more, or a total for the two years of $1,600,000.

Now, let us notice that the fact of the co-operation of the local companies made it possible to maintain offices that could bring such matters to the attention of the companies. No one will say but what, if there had been no national organization, the probabilities are that the bill would have become a law as it was originally drafted and the companies would have to pay the tax. What did this saving amount to with your company?

Secondly, because of the fact that these companies have a national organization through which they can deal, they naturally are willing to co-operate with the association when an appeal is sent out.

The Interstate Commerce Commission has jurisdiction over all telephone companies that send or receive interstate messages. They have outlined systems of accounts for Class A, B and C companies. The national organizations have had a great deal to do with the forming of these systems of accounting. The committees representing the associations have held many conferences with the representatives of the commission having charge of this matter. What that service means to the Independent companies or local companies, generally, cannot be estimated. The accounts prescribed by the commission will unquestionably give the local companies much valuable information which many of them have never had before in their systems of accounting and which will be more fully appreciated later.

Valuation Act of Interstate Commission.

The Interstate Commerce Commission is now at work on valuation matters which are prescribed in what is known as the "Valuation Act." Some conferences have already been held by the association's valuation committee. Last year this was handled by means of a joint committee representing the two associations. This year, with one national organization representing Independent telephony, it will be looked after by one valuation committee. It is going to be a most important work as time progresses and the commission becomes more active in the matter. The value of our properties, the rates we may charge, and the return we may secure on our investment, will, undoubtedly, be ultimately determined by these valuation proceedings. Thus the service to the local companies cannot be over-estimated. The work sooner or later is going to come right home to every local telephone company. What has the work meant to the local companies?

Let us illustrate a few of the phases of the work which comes under the service department. During the year 1915, 30 operators' schools were held throughout the states of Minnesota, Wisconsin, Illinois, Indiana, Ohio and Pennsylvania. Wherever these meetings have been held, the managers testify they have been able to notice a material difference in the spirit of the service furnished and the results accomplished. F. H. Runkel, of Portage, Wis., at the convention of the Wisconsin Telephone Association held recently at Madison, stated his only regret was that they could not have these meetings at least every three months.

Benefit of Operators' Schools.

An operators' meeting was held at Plymouth, Ind., on March 8 and 9, under the auspices of the Northern Indiana Independent Telephone Association. President Samuel Tomlinson wrote: "I believe it would have paid us, from a financial standpoint, if Plymouth had had to bear all of the expense, alone."

What the benefits are to the companies, in dollars and cents, can hardly be estimated, but wherever these meetings are held, a beneficial effect is produced on the service of the territory represented at the meetings. Work like this could not be carried on without the co-operation which can be secured only through organization.

Let us cite you to some legal questions that are submitted to the association occasionally:

Under date of January 6, 1916, the Northern Iowa Telephone Co., of Cresco, Iowa, wrote for information as to the rights of house-movers—whether or not houses could be moved without securing a permit from local authorities. The house-mov-

ers in Cresco contended that telephone and other wire companies had no rights that they must respect. Information on file in the association's Chicago office was sent to the Cresco by early mail. Following is the letter which was written giving the results produced from use of the information furnished:

Cresco, Iowa, January 19, 1916.

W. S. Vivian, Secretary-Treasurer,
United States Independent Telephone Assn.,
19 So. La Salle St.,
Chicago, Ill.

Dear Sir:

In reply to your kind letter of information of the 13th inst., we have to tell you that we gave the information contained in the letter and the brief to our city mayor. He immediately gave it careful consideration and the next morning served notice on a house-mover, who had violated the ordinance, that he would have a fine to pay. The house-mover appeared with his counsel and asked for a jury trial. The request was granted and court adjourned until next day. The next morning the house-mover and counsel appeared before the mayor and asked that action be dismissed, pleading guilty and paying the fine.

We wish to thank you very much for the attention you gave us in this matter, and we have to say that if others who are not members of the association, only knew what benefits they might derive from the same, they certainly would not "hang back" long from joining it. Again expressing our appreciation, we are

Very truly yours,
The Northern Iowa Telephone Company,
H. G. Addie, Superintendent.

This is but one of numerous instances that could be mentioned if space permitted.

What does the association do for the local company? Remember that co-operation is the foundation in this work. In the illustration just given, if we had not had the co-operation of the local companies, we would not have had an association, and this information would not have been on file for the use of our member companies. Again, if the officers of the local company, which in this case was located at Cresco, Iowa, had not bethought themselves of the benefits to be derived from the association and submitted the problem to us, the information would have been of no benefit to them. But they co-operated by stating their troubles to us and the problem was solved, as it has been solved for many other companies in recent years because of associated effort.

Our Standardization Bulletin No. 1, of which several thousand copies have been distributed since the first of the year, is an evidence of co-operation and of what the association can do for local companies. The bulletin, called "More Subscribers," containing advertising suggestions, is a direct result of co-operation and an evidence of what the association can do for local companies. Operating rules for long distance purposes, also for magneto and common battery local service, have been compiled and published, evidence of what the association can do for local companies.

Secretary E. C. Blomeyer, of the Texas Independent Telephone Association, recently published a paper on "The Value of Statistics." Many splendid suggestions which should be carried out, were offered in that paper. The national organization is really a practical solution to that problem because, in the association, statistics can be gathered, comparisons made, and data published that will be of value to every company. This will enable companies to know whether the results they are securing from their property are what they ought to be in the light of comparison with other properties.

The association is the logical center for a great information bureau, showing what conditions are all over the country, what labor conditions are, what salaries are paid. The salary question is a controlling factor in the operation of a telephone plant. Every company desires to pay the best salaries it can. It is a problem with many to know just what salaries they ought to pay for various kinds of work. The association can properly compile such information. Such questions as to how many hours constitute a day's work, what holidays should be given with pay, the rate for overtime, how many operators are required, the wages and classification, wages on hourly, daily or weekly basis, hours employed each day, information as to bonuses, anniversary payments, sick benefit insurance, pension provisions, etc., are matters of information which a national organization can compile that will be of inestimable value to the local company.

As a matter of fact, there is no limit to what the association can do for the local companies. The greater problem is to get the local companies to realize the advantages offered by the association and to avail themselves of these advantages. The cost of membership in the association is $5 a year. In return, companies receive benefits, direct and indirect, the value of which, in dollars and cents, greatly exceeds the membership fee. To enable the association to do its best work and the local companies to get the best results for themselves and their stockholders, every local company in the United States should immediately make application for membership in the United States Independent Telephone Association.

Membership pays. There are big dividends in associated effort.

Annual Report of Home T. & T. of Los Angeles.

The Home Telephone & Telegraph Co., of Los Angeles, Cal., reports gross earnings for the year ended December 31, 1915, of $2,035,321. Deducting operating expenses and depreciation which amount to $1,533,180, leaves a net income of $502,141. Of this amount $37,500 were paid out in dividends, $210,938 for bond and current interest, $84,916 went to the sinking fund to redeem bonds and $9,403 for the amortization of bond discount and expenses. This left a surplus of $159,385.

The earnings and expenses of the company follow:

		1914.		1915.
Gross earnings		$1,909,634		$2,035,321
Operating expenses and depreciation		1,584,169		1,533,180
		$ 325,465		$ 502,141
Bond and current interest	$230,025		$210,938	
Sinking fund to redeem bonds	86,037		84,916	
Amortization of bond discount and expenses	9,403		9,402	
Dividend			37,500	
		$ 325,465		$ 342,756
Surplus for additions, betterments, etc.				$159,385

The company has outstanding $3,000,000 preferred stock, $3,000,000 common stock, $2,034,000 first mortgage bonds and $2,079,000 refunding mortgage bonds. Bonds to the amount of $887,000 had been bought in and canceled at the close of the year 1915, through the sinking fund.

Report of Duluth (Minn.) Telephone Co. for 1915.

The annual report of the Duluth (Bell) Telephone Co., of Duluth, Minn., for 1915 was recently filed with the city auditor. It shows that the company's gross revenues in 1915 were $244,831, while in 1914 they were $226,484. Expenses in 1915 were $224,505, leaving a net income of $20,326, whereas in 1914 the expenses were $205,505.68, and the net income $20,979.

In the last year, according to the report, the company expended $121,737 on new buildings, property and equipment. The value of the plant on January 1, 1916, is placed at $1,246,828.

The outstanding capital stock of the company is valued at $100,000. Of the 2,000 shares, 1,954 are held by C. E. Yost, trustee, Omaha, Neb. The Duluth Telephone Co. holds 30, while the remaining 16 are in the hands of Omaha, New York and Minneapolis men.

Annual Reports and Meetings of Telephone Companies

Statements Issued by Telephone Companies in Various Parts of the Country Relative to Their Operations During the Past Year—Earnings and Surplus Accounts Show Companies to Be in Excellent Financial Condition—Election of Officers

Report of Mountain States Telephone & Telegraph Co.

For the year ended December 31, 1915, the Mountain States Telephone & Telegraph Co., Denver, Colo., reports gross earnings of $7,849,675. The operating expenses were $4,935,292, including $1,009,371 which has been set aside for depreciation. Other deductions brings the net income down to $2,316,175 all of which was appropriated for dividends.

There was a gain of 22,568 stations during the year, a gain amounting to 45.6 per cent. since 1911. The exchanges and toll systems of the company were increased in 1915 to the amount, in money, of $2,087,075, while the unappraised property purchased stands at $45,914.

At the annual meeting of the stockholders of the Mountain States company, held recently in Denver, an appropriation of $3,950,000 was voted for extensions and betterments to the system to be carried out this year.

Annual Report of Mankato (Minn.) Telephone Co.

At the annual meeting of the stockholders of the Mankato (Minn.) Telephone Co., Secretary-Treasurer W. D. Willard reported a total operating income of $63,568 for the year ended December 31, 1915. This total includes $57,121, exchange rentals and $2,368 toll revenues. The expenses totaled $30,327, leaving a net operating revenue of $33,-341. A depreciation reserve of $10,985 was set aside and $10,846 were paid out in dividends. Other minor additions and deductions left a surplus of $11,050 for the year. The income expense statement follows:

Exchange rentals	$57,121
Toll system	2,368
Earnings from connecting lines	1,505
Commission from Tri-State company	2,077
Rents from pole and wire privileges	236
Advertisements in directory	261
Total operating income	$63,568
Expenses:	
Maintenance	$ 9,200
Traffic	8,638
Commercial	2,104
General	6,954
Reconstruction	1,015
Taxes	2,130
Rents paid	186
Total expense	$30,227
Net operating income	$33,341
Deduct depreciation	10,985
	$22,356
Additional rents from building	100
Miscellaneous non-operating revenues—Stores sold	99
Purchase discounts	172
	$22,727
Deduct interest on bills payable	615
	$22,112
Deduct dividends paid	10,846
	$11,266
Deduct uncollectable	216
Surplus for year	$11,050

Manager P. M. Ferguson reported an increase of 306 subscribers during the year, bringing the total number up to 3,667. H. E. Hance, S. B. Wilson, J. R. Snow, Wm. Just and H. C. Hotaling, whose terms as directors of the company had expired, were all re-elected to succeed themselves.

The company's balance sheet, as of January 1, 1916, follows:

ASSETS.

Plant	$225,169
Accounts receivable	4,349
Stores account	4,212
Tolls accrued, etc.	596
Cash on hand	405
Petty cash account	100
Advance expense account	20
	$234,851

LIABILITIES.

Capital stock	$144,650
Depreciation reserve	45,940
Bills payable	6,100
Taxes accrued	2,130
Salaries accrued	862
Profit and loss	34,700
First National Bank	336
National Citizens Bank	133
	$234,851

Earnings of Ohio State Telephone Co. for January.

The earnings statement of the Ohio State Telephone Co., for January shows an increase of $41,629 over the same month for the preceding year and an increase of $17,494 in surplus earnings. The comparative statement follows:

	January 1915.	January 1916.
Gross revenue	$245,350	$286,979
Expenses, including taxes and insurance	143,954	166,171
Bond interest	44,564	46,484
Preferred dividend	26,087	26,087
Balance unassigned	30,742	48,236

The company has also issued a comparative statement for the six months ended January 1, 1916, which shows large increases in both gross and net revenues and in unassigned surplus: The comparative statement follows:

	Aug. 1, 1914, to Jan. 1, 1915.	Aug. 1, 1915, to Jan. 1, 1916.
Gross revenue	$1,563,312	$1,701,016
Expenses, including taxes and insurance	994,227	992,237
Bond interest	257,103	278,207
Preferred dividend	160,967	155,527
Balance unassigned	151,013	274,043

Annual Report of Home T. & T. of Portland, Ore.

The annual report of the Home Telephone & Telegraph Co. of Portland, Ore., shows a slight decrease in gross and net earnings for the year 1915. The gross earnings were $301,851; operating expenses and fixed charges, $284,927, leaving a surplus of $16,924. Gross earnings for the three years ended December 31, 1915, were: 1913, $364,671; 1914, $337,893; 1915, $301,851. After deducting operating expenses and fixed charges for each year, the surplus was: 1913, $76,467; 1914, $40,508; 1915, $16,924.

The company has $2,743,400 in 5 per cent. bonds outstanding, on which interest was earned and paid. The outstanding stock amounts to $2,674,708.

Practical Subjects—Letters and Discussions

"Telephony's" Home Course for Telephone Men.
(Not meant for study.)
By Well Clay.
EIGHTH ENDEAVOR.

When the meadow lark trills its sweetest note
And the old mare sheds her hairy coat;
When bonfire smoke hangs in the air
And the green grass is growing everywhere;
When the warm rains come to freshen things
And the geese go north on tireless wings;
When marbles engross the small boy's mind;
And no matter where you look you'll find
Old Dame Nature a-changing her dress:
I like it best of all, I confess;
Because you see—it's Spring.

The above lines are thrown off, not as a faithful report on present conditions, but rather from a remembrance of past joys and hope for favors yet to come, for it is not spring up here in the Northwest, except officially. In the spring, the young man's fancy turns to baseball and new neckties, while the telephone man greases up the old jitney and prepares to hie himself forth to knit anew the ragged edge of depreciation on the rural lines. I am glad Shakespeare was thoughtful enough to have his works published, as quotations from his lines are very handy to express things in a better light when your own tank is dry.

While we were engaged in a struggle, which seemed at the time so relentless towards us on behalf of the public—and it would have been if the public had known the state of our mind—the mail of our patrons was loaded with circulars from certain manufacturers of telephone apparatus, setting forth to the rural folks the ease with which a co-operative company could be formed and equipment purchased and installed, after which there would be little trouble or expense. This concern did not know, perhaps, that we were in trouble and had a fight on. Perhaps we imagined a good deal at the time which was not so, but the fact remained that the circulars were in the mails at that time.

Now we had been purchasing telephone apparatus from this same concern for a long time and felt a good deal hurt at the policy which it was following. It seemed short-sighted and hardly ethical. The result was, naturally, that their sales fell off considerably; that is to say, altogether with us. I know also to a dead certainty that not a sale of apparatus did they make in my territory to those to whom they sent their circulars. This is mentioned merely in passing to accent the fact that we must not only stand by the Independent manufacturers but that it would seem only fitting that the manufacturers should stand by us—I mean the Independent manufacturers, for one of such was this concern.

People are hard to convince. During the time we had a part of our former patrons going without telephones, a good many things happened which illustrate this common trait of human nature.

A man died from heart trouble in the night on a farm several miles from town. He had been subject to spells, and before had always been brought round by the doctor, quickly summoned by telephone. He had taken out his telephone and could not be brought to the point of taking it back. The result was deplorable and no one regretted the circumstance more than myself, for he was a very good friend.

"Now," I thought, "with this example in our favor, I can go down in that neighborhood in a few days and harvest the whole bunch who have been hanging out, mainly on account of the dead man's leadership."

I felt so confident that I slipped a couple of telephones and a roll of "drop" under the buggy seat, so I could save at least one trip. Did I get any? Not a one, except the widow, and she had ordered hers the day after the funeral. The hardest one in the lot, too, to talk to, was supposed to have heart trouble at times.

I used to wonder when I was a kid, when we had to turn out and fill a drunkard's grave—after he was inside—why all the other drunkards in the community did not immediately get scared to death and turn over a new leaf as a result of the example just afforded them. But they were the most unconcerned ones in the bunch. There isn't a doubt but each held privately to the opinion that he personally was going to be immune.

How many telephone men, today, have the same opinion regarding the possibility of their suffering eventually from the disease of depreciation? In all history there was only one Noah. The proportion that believed what he said, against the bunch that expressed the opinion, "we should worry," has held about the same as to percentages down to the present day.

Now be honest and admit that such has been your own attitude a good many times! You need not tell anybody, but it will do you good to admit it to yourself.

The only thing that brought that "bunch" was when I quit going after them—another human nature stunt with which I became for the first time familiar. One has to work every stunt imaginable to successfully carry out a "raise in rates." But it is worth the trouble and effort, if you survive and keep out of the asylum. All the while one is doing the job, he has to be always solving a raft of other troubles which come up day after day.

The operators get too free with your patrons by answering back, "flip and snappy," undo the painful labor of weeks on your part to get him safely settled down in the old relations. A telephone goes out of commission in some rural subscriber's home, just when a doctor is needed and gives the service a black eye. A thousand things may happen—and do—to keep you in hot water. Yet there are lots of good times mixed up in the layers of trouble, if you can see them. And if you take advantage of these, as one would of resting points along the way, you will not fare so badly after all.

Once you get over the troubles incident to a "raise," you will have no time to sit down and think over the campaign, for you will find a new problem coming your way like a cyclone.

We had scarcely dodged one catastrophe before there came another. The rural lines, radiating like a spider web in all directions, began to lose the lean and hungry condition of the troublesome days and to fill up to overflowing. Some means of easing up on the pressure had to be devised. Running new circuits was, of course, the only way out, so we ran a few and "cut-over" a few from congested lines to the new circuits—without the formality of asking consents.

We had been "saving it" as a pleasant surprise and anticipated how grateful the various ones would be to the company for going to the extra expense and trouble to make things more pleasant for them, without their having to ask for it. Oh, yes! There was a surprise, but we were like the darkey who tried to blow the medicinal powders down the throat of his mule through a tube. The mule, "he done blowed fust"—and we got the surprise.

They were the maddest bunch we ever saw. They wanted a lot of subscribers "taken off" but they all wanted "some one else" to be transferred. Why? Well they were "relations" and "friends" and "on the town board together" and so on, until it was like unravelling the roots of a willow tree to separate them.

We had 23 on one line and had taken off eight. We got the eight who were the easiest "riled," I guess, for we forgot all about our other troubles right away. We had "taken

them off" and they wanted to be "back." The majority of the ones still left on the line said: "Leave them off." Here and there a fellow would come in and tell us an easy way out by suggesting the elimination of a few—in whom he was not interested or related to. No one volunteered, however, and we were up against a new problem.

The way we worked the matter out, finally, was to take one man, who had several sons-in-law, and make a family line, so to speak. Then we worked over a few of their closest friends—always consulting them beforehand—and soon had ten or a dozen "off the line." Our troubles were over? Scarcely. In a short time the people along the lines which had heretofore been without telephones soon filled up the vacancies in the lines, and we had two lines crowded to the limit. We worked a repeat with a third circuit and now this is full—from 18 to 23 on a line and all serene.

We had been having more or less trouble on the lines from "rubbernecks" and "buttinskies," as we always do, especially in the winter seasons when there is not much out-of-doors' work to do and time hangs heavy. Sometimes they get pretty "mean" and would interfere with conversations and make noises during conversations, either by "ringing in" or otherwise, until on some lines it got so their use was all but spoiled. Finally we made a careful survey of the lines on which these interruptions occurred, frankly expecting to find that difficulties resulted from "overloading." Imagine our surprise to find that the lines with comparatively few parties on them were the ones on which there was found the most trouble, while those lines which were loaded to the limit were comparatively free.

The reason for such a result turned out to be that on lines loaded full, the habit of "interfering," if indulged in by all, would soon make it impossible for any to use the service at all. Therefore, a full line was, in a way, its own protection, whereas, on a line lightly loaded, there was still time to use the line when the others got through. This sounds strange but in our experience it has always worked out in exactly that way.

QUIZ QUESTIONS FOR REFLECTION.

Why does a "bad example" scare only those who don't need the lesson?

If we fail to correctly analyze human nature, are we competent to judge ourselves?

After lightning has struck, why are humans prone to haunt the spot where the havoc was?

You know your neighbor ought to reform, but with you it is different—why?

The reason people didn't believe in Noah was because they didn't want to "wet over."

Power Trouble Diagnosed Over Telephone.

On starting a 300-kilowatt rotary converter in a substation one morning, the operator was unable to account for a vicious arc at one of the terminals of the shunt-field circuit, says an item in the Electrical World. The connections were apparently all right. A conversation with the electrical engineer over the telephone resulted in directions to pull the terminal out from the coil and fill the hole behind it with very thick shellac. This was done and the arcing stopped.

Why "The Line's Busy."

One of the frequent reasons why the operator has to report, "The line's busy," is shown in the accompanying illustration from a photograph by Val. B. Mintun, of Kansas City, and reproduced through the courtesy of the South-western Telephone News. The picture tells the story so effectively that no explanation is necessary.

The Picture Tells Its Own Story Why "the Line's Busy."

A Novel Method of Signaling.

I noticed on two occasions in TELEPHONY the peculiar methods of signaling that farmers and their wives have employed in calling their people from the fields. One I note used a high power auto horn while another used a test set. I have seen signals of various kinds used—flags, large bells, etc.—but last August I discovered a new one which, considering how it was discovered, is quite novel.

On a tour of inspection I happened to stop at a farmhouse for dinner. The woman who came to the door said that she would call her husband. Upon inquiring where he was, she handed me a handsome pair of binoculars and pointed down the valley to where her husband was cutting grain. I looked and could see the big caterpillar pulling two headers, and although I said nothing I kept wondering what method of communication she could possibly have.

I did not have long to wait, however, for as I watched the big engine round the end of the cutting and make its return trip facing us, the farmer's wife took the glass and gave a look, then stepped into the house and what do you think she brought out with her? Just an ordinary mirror. She held this in the sun and flashed it into his eyes three times—and he five miles away. As I watched, I could see the machine come to a stop and presently I saw him coming up the road in his runabout car.

The woman explained that she learned this heliograph method and a half dozen signals from the Indians and I suggested that she ought to learn "continental." On cloudy days when there is no sun (which, by the way, is a very rare occurrence in the Dakotas) she goes by dead reckoning, I suppose. I added to my knowledge and, together with a wonderful dinner, felt satisfied indeed.

Linton, N. D. R. H. Perry.

Annual Convention of Oklahoma Independent Association

Two-day Meeting of Year-old Organization of Oklahoma Independents Held in Oklahoma City Last Week—Addresses and Discussions of Practical Nature—Accomplishments of Association Since Its Organization—Rapid Growth Since Inception in January, 1915

The meeting of the Oklahoma Independent Telephone Association, held at Oklahoma City, on March 24 and 25, was a great success. The association is a strictly Independent organization, having only as its members owners and operators of Independent telephone properties, and members and representatives of Independent telephone supply companies. The organization is but little more than a year old, having been organized in January, 1915. It organized with 50 exchanges represented on its roster, and at its last meeting added to its membership 17 new companies and eight representatives of Independent supply concerns and others eligible to membership.

ADDRESSES AND DISCUSSIONS.

The forenoons of both days were given to visits among members and inspection of exhibits of supply houses. In the absence of D. F. Vincent, president of the association, E. D. Evans, secretary, presided and delivered the welcome address.

H. E. Musson, telephone and electrical engineer of the Oklahoma Corporation Commission, delivered an interesting address on "Aims and Objects of Association." He impressed on the members that it is through organization and association that beneficent results in the interest of the industry are usually obtained, and that through co-operation among those in the telephone business their interests are being and can always be promoted.

J. W. Coffey, of the Coffey Audit & System Co., of Indianapolis, Ind., was unavoidably absent, and T. D. Trickey, auditor of the United Telephone Co., of Afton, was substituted and presented an interesting and instructive paper on "Telephone Accounting." O. A. Cox, of the Cox Arrester Co., Eaton, Ohio, was called and chose his own subject. He made a very forceful argument in favor of close and strong organization.

J. A. Smith addressed the association upon general questions of mutual interest, in which he maintained that in his judgment municipal control over public utilities was better for the industry than state control. Upon this question he invited antagonism, and a number of members came back at him with herculean arguments in favor of state control, in which they lauded the Oklahoma Corporation Commission in the strongest terms. It appeared to be the consensus of opinion that as long as the personnel of the corporation commission is made up of men of honesty and integrity, it is much better for the utility to have a common governmental control than to have to deal with local authorities, who cannot know and have no opportunities to know anything of the business with which they will undertake to deal.

Saturday afternoon, H. W. Hubenthal, of Afton, superintendent of the United Telephone Co., delivered an instructive address on the subject, "Telephone Engineering and Service," going into detail as to the manner and methods of eliminating trouble and obviating the necessity of complaints to obtain adequate service.

One of the most instructive addresses of the meeting, from an operating standpoint, was made by Herbert J. Clark, of the Kellogg Switchboard & Supply Co., Kansas City, on the subject of "Magneto Maintenance." Every one present felt greatly benefited by this presentation of a subject of so much interest.

E. C. Patton, of Oklahoma City, general attorney for the association, spoke on the subject of "History and Results of Our Association." He told in detail what has been accomplished for the members through its organization during the past year. Among the results outlined by Mr. Patton were increases in rental rates for eight companies; the obtaining of a more fair and equitable division of toll revenues for all member companies; the working out of the right to route messages over Independent toll lines, as initial lines, in the transmission of messages through connections with Bell toll lines—that is when the Independent exchange owns a toll line in the direction of the delivering point of the message, the Independent company should have the right to route the message as far as it can over its own line, and take a line haul in the revenue from the message. Another advantage accomplished has been the physical connection of Independent toll lines with Bell toll lines.

Mr. Patton stated that the only fight the association has lost was upon the rates to be paid for switching farmer lines, where the company was charging 50 cents per telephone. The commission, by order, reduced the charge to 25 cents. This case, however, is pending on appeal in the state supreme court, and the prospects for a reversal of the order are fair. He stated further, that in all the protests filed upon valuations by the State Board of Equalization, reductions of from 15 to 30 per cent. below the tentative assessment had been obtained.

A. J. Roberts, manager of the Kansas City branch of the Garford Mfg. Co., entertained the convention with a discourse on the subject of "Independent Equipment for Independent Exchanges." His was a masterful appeal to the Independent telephone companies to stand by the Independent dealers and to buy their equipment and supplies from them in preference to companies controlled by or associated with the Bell company.

B. H. Batte, of the Utilities Indemnity Exchange, enlightened the association upon the plan and the advantages of the exchange in liability or indemnity insurance.

A vote of thanks was extended to all visiting speakers. After election of officers the association was entertained with a comical discourse by Jack D. Milburn, of the Stromberg-Carlson company, on the subjects, "How Do You Hear Me Now?" "Yes, There Is a Bird on the Wire."

Officers elected were as follows: President, C. E. Devan, of Apache; vice-president, Troy A. Simpkins, of Minco, and secretary, H. W. Hubenthal, of Afton. A. Gordon, of Mangum; M. M. Flinckinger, of Kingfisher; George Massey, of Watonga; George Holt, of Quinton, and E. D. Simpkins, in addition to the president and secretary, comprise the executive committee.

The convention adjourned, subject to call for the next meeting by the executive committee, with the understanding that the date would be fixed to conform as nearly as possible with the line of meetings that will be attended by exhibitors and officers of the United States Independent Telephone Association.

Toll Reduced Between Washburn and Iron River, Wis.

The Wisconsin Telephone Co. has reduced the toll rate between Washburn and Iron River, Wis., from 21 to 15 cents, which includes the war revenue stamp.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies, Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Woodburn, Ore., to Test Commission's Right to Fix Rates.

To determine whether the public service commission can legally increase public utility rates fixed by a municipal franchise, is the question involved in a suit instituted in the circuit court at Salem, Ore., against the Oregon Public Service Commission by the city of Woodburn.

According to the complaint filed by the city, it granted the Western Telephone Co. a franchise in 1910, and under its provisions the maximum rates for telephones were fixed at $1.50 a month for a single-party line, $1.25 a month for a two-party line and $1 a month for a line of more than two parties. After an investigation, the commission last fall issued an order fixing the following rates: One-party line business, $2.50 per month; two-party, $2.25; four-party, $2; residence, one-party line, $2; two-party, $1.75; four-party, $1.50; business, suburban, $1.50, and residence, $1.

Attorneys representing the city contend that the commission was without legal authority to increase the rates, and the commission contends that its powers in fixing rates supersedes the franchise in question. Indications are that the case will be prosecuted to the highest court.

Prior to asking for an increase in rates the Western Telephone Co. consolidated with the Favorite Telephone Co., and this fact was taken into consideration by the commission in fixing the rates.

The company is made a defendant in the case, and its attorneys have joined with the commissin in resisting the suit of the city. The city asks for an injunction to restrain the commission from putting the order into effect.

Hearing on Telephone Investigation in Washington.

After a brief session on March 20 the Washington Public Service Commission finished its hearing relative to the physical valuation of the properties of the Pacific Telephone & Telegraph Co. in the state, which was begun in Tacoma, January 17. After the close of the testimony Chairman C. A. Reynolds announced that the commission would take the case under advisement. Findings on the valuation are not anticipated in several months, inasmuch as a mass of data is involved.

Chairman Reynolds also announced that the commission will begin its rate hearing in Olympia on May 21. At that time the commission will also consider the question of segregation of properties used for local and toll service in the larger cities of the state; the question of discrimination and of switching rates on farmers' lines. In order that a proper consideration of the question of rates and segregation of local and toll service may be had, a traffic survey will be started immediately to determine to what extent exchange lines are used for toll or long distance service.

Hearing on Indianapolis Merger.

A hearing was held last week before the Indiana Public Service Commission on the proposed merger of the Indianapolis Telephone Co., of Indianapolis, Ind., the New Telephone Co., and the New Long Distance Telephone Co. Edward L. Cline, general manager of the Indianapolis Telephone Co. placed the value of the New Long Distance company at $1,475,654 and the value of the Indianapolis company at $2,864,317. These figures, he stated, were estimated upon the cost to reproduce the properties.

It was shown that the Indianapolis companies have about 14,000 stations and that a valuation of about $196 had been placed on each station. The companies produced figures to show the dividends and fixed charges, such as interest charges, under the merged plan would amount to about $5,481 less than at present. The annual net earnings of the companies for the year 1915 were $184,814.

William A. Pickens, corporation counsel of Indianapolis, represented the interest of the citizens at the hearing.

New Schedule of Rates for Wellborn, Fla.

The Florida Railroad Commission, on March 24, granted the petition of the Little River Telephone Co., to put in effect in Wellborn, Fla., the following schedule of rates:

Toll charge to non-subscribers	25c
Rural and residence stations, per month	$2.00
Business stations, per month	2.50

The petition was granted with the understanding that the plant must be put into good workable condition, necessitating considerable improvements, and that the improvements be made at an early date, or in the event that the plant is sold, the purchaser will agree to make such improvements as a condition precedent to the sale or transfer of the property. The order became effective April 1.

General Telephone Investigation Expected in Massachusetts.

Entire willingness to submit to a comprehensive investigation of rates by the Massachusetts Public Service Commission was voiced by Vice-President E. K. Hall, of the New England Telephone & Telegraph Co., at a hearing before the legislative committee on mercantile affairs, March 23, at Boston, Mass. The commission appeared before the committee on behalf of an appropriation of $25,000, to enable it to conduct the inquiry in a thorough manner.

Benjamin C. Lane, for the United Improvement Association, Boston, was the first speaker. He reviewed the history of telephone regulation in Massachusetts, and urged the granting of the appropriation, on the ground that the public has never been satisfied with the zone rate schedule adopted about six years ago, as the result of the Jackson investigation for the Massachusetts Highway Commission. Mr. Lane vigorously advocated the restoration of six-party line service, and condemned tendencies toward measured service charges, on the ground that with the telephone plant the customer merely borows the use of the equipment and operating facilities for a time, and does not consume any sensible amount of the world's resources in so doing.

Chairman F. J. McLeod, of the Massachusetts commission, which now has jurisdiction over telephone companies in place of the former supervision exercised by the highway board, said that it is absolutely necessary for the legislature to appropriate funds for the investigation, if the board is to carry out its regulative duties in the same complete and effective manner with which it supervises the transportation companies of the state. Because of inadequate finances, and consequently insufficient organization, the commission has been unable to act as it should. Two formal rate petitions are now before the commission and several complaints. None of the other departments of the commission are able to take over the work pertaining to telephone rate regulation.

The commission does not care whether a regular annual

allowance be made for this branch of its work, or whether a special appropriation be made. The cost of the telephone department of the commission is only $6,500 a year, there being a chief and two inspectors engaged so constantly in the supervision of service problems and the adjustment of complaints, etc., that the department literally may be said to be working day and night. As the public learns the availability of this department for appeal in case of service or other troubles, the volume of work is increasing with leaps and bounds. A more extended organization, or at least additional facilities, are absolutely necessary for handling the rate problem in the manner required by the public. The reputation of the department under Mr. O'Brien, the chairman pointed out, is growing steadily, and the work must go on.

Mr. McLeod said that the commission has entirely an open mind regarding the rates of the telephone systems in Massachusetts, that of the New England company, of course, being the chief in importance. Said he, in part:

"Complaints in regard to rates are fairly frequent. The public is entitled to some adjudication of rates by a responsible body. It is in the highest degree humiliating that the hands of the commission should be tied by lack of funds for this important work. Such a policy simply means that telephone users are obliged to take such rates as the company offers. A growing feeling of dissatisfaction with telephone rates as they stand is in evidence. The measured service rate in New York and Chicago, for 1,000 calls, with 600,000 and 400,000 telephones respectively, is $50 per year against $78 in Boston, where 200,000 telephones are in use. Again, it appears that the average charge per business call is about 7/8 of a cent at Boston (unmeasured), while in the suburban measured service rates a charge of 5 cents is made. This demands investigation as a part of a general inquiry. A piece-meal investigation would be unsatisfactory, tending to throw the whole system out of balance.

"The commission cannot determine at this time whether an increase or a decrease in rates is necessary, or whether a revaluation of property should be made. The Massachusetts regulative practice bears heavily upon the wise and prudent capital investment as a basis of rate-making, rather than upon reproduction cost. The Jackson valuation would be considered, no doubt, in a measure, but the board would feel free to check this as far as necessary. There is no public supervision in Massachusetts of the New England company's capitalization. The relations between the New England company and the American Telephone & Telegraph Co. also need to be thoroughly studied."

Commissioner J. B. Eastman, of Massachusetts, pointed out that in the past general investigations had often been made too late, notably in case of the New Haven railroad situation under the Mellen regime. The highway commission did not go into all the details of intercorporate relationship, and these should be investigated. Closing, Mr. McLeod added that it would take about three months to organize the commission for the proposed inquiry.

E. K. Hall, for the telephone company, said that the demand of Mr. Lane for six-party line service was utterly incompatible with efficient telephony under metropolitan conditions. He said that he held no brief for the Jackson report, but that its author, Professor D. C. Jackson, of the Massachusetts Institute of Technology, stands very high in the electrical engineering profession, and should not be attacked without protest. Mr. Hall said that the schedule of rates promulgated by the highway commission cost the company $500,000 a year, but that it is a better schedule than anything which preceded it, and commands the admiration of many telephone rate experts from outside the state. Boston and its suburbs constitute the most difficult telephone rate problem in the country, having a metropolitan area of 400 square miles, and involving over 50 municipalities.

Mr. Hall heartily favored the proposed investigation along the lines suggested by the commission, stating that the company has nothing to conceal, and that full publicity will be a benefit to all concerned. He opposed assessing the cost of the investigation upon the company, and this was not advocated by the commission. He urged that no time limit be set for the completion of the investigation, on the ground that the company faces the largest construction task in its history this summer, and that the investigation necessarily must take a good deal of time away from other work.

Invalid Ordinance.

Code 1873 of Iowa, section 1324, as amended by Acts of the 19th General Assembly, chapter 104, provides that any person or company may construct a telephone line along the public highways of the state, etc. Code 1897, section 775, gives to cities the power to authorize and regulate telephone companies by general and uniform regulation, and to provide the way in which, and the places where, their poles shall be placed on city streets. Section 776 provides that no franchise shall be granted or extended by any city for the use of its streets, unless a majority of the legal electors voting thereon vote in its favor.

A city, without statutory authority to grant a franchise to a telephone company, in 1894 passed an ordinance granting a company a charter or license for 15 years, which ordinance was ultra vires and void, but the company accepted it, constructed a telephone system, and operated it for such period.

The court held that the company's acceptance of the void ordinance did not estop it from claiming under the valid legislative grant by the state, and that even if the ordinance was treated as a license to use the streets, all its terms had been complied with and neither party was claiming anything directly thereunder, so that the result would be the same.—Larimer vs. Charlton Telephone Co.; Supreme Court of Iowa; 155 Northwestern, 968.

Death from Live Guy Wire.

A guy wire, attached to a pole supporting telephone wires and to the top of a pole supporting power and fire alarm wires, passed over and under and in close proximity to the power wires, whose insulation in places showed old abrasions. Whether the town which maintained the power wire pole and owned the wires knew, or by the exercise of proper care and diligence might have had reasonable notice, of the defect in insulation and the probable presence in the guy wire of electrical energy sufficient to destroy human life, was for the jury, in an action for death caused by a shock from such wire.

Where no danger was obviously likely to result to decedent from the act of leaning against a telephone pole, or from touching or grasping a guy wire which ran down from a town's pole, supporting power and fire alarm wires, to the telephone pole, decedent was not negligent in so doing.—O'Donnell vs. North Attleborough; Supreme Judicial Court of Massachusetts; 111 Northeastern, 374.

Injury from Wire.

The defendant maintained a telephone line consisting of one wire supported on poles placed at the side of a public highway close to a hedge. At one place the wire sagged to within four feet of the ground. The plaintiff, who was traveling with a team and wagon, stopped at noon to rest, and turned his horses out to graze on the road. A storm came up, and the horses went to the side of the road close to the hedge for shelter. While standing under

the wire where it sagged they were killed by lighting which first struck one of the poles 150 feet distant.

The telephone wire was not in itself dangerous to persons or animals using the highway for ordinary purposes of travel, and, even though it were held negligence to maintain the wire so close to the ground, it was not the proximate cause of the injury. That required a conjunction of conditions and circumstances of an extraordinary nature which it is not reasonable to say a person of ordinary prudence and foresight should have anticipated.—Simon vs. Missouri & Kansas Telephone Co.; Supreme Court of Kansas; 154 Pacific, 242.

Franchise.

A permit granted by the mayor and aldermen of a city for the erection of telegraph poles and wires in a street, and duly made use of, though granted without any legal consideration being paid therefor and in general terms without any limit, is not revocable at will, but constituted a franchise which is assignable, and could not be terminated or substantially modified, except for good cause. See Owensboro vs. Cumberland Telephone & Telegraph Co., 230 United States 58, 33 Sup. Ct. 988, 57 L. Ed. 1,389.

Where a permit for the erection and maintenance of telegraph poles and wires in a street was not signed by the mayor and aldermen of the city, or a majority of them, but by the clerk in their behalf, any irregularity therein was made good by acquiescence in their use of the street for 25 years.—Postal Telegraph-Cable Co. vs. Ingraham; United States District Court, Maine; 228 Federal, 392.

Rusting of Guy Wire.

Where a city used a guy wire to stay up an electric light pole somewhat lighter than that customarily used, which remained in place eight years before breaking, the city was not guilty of negligence in the installation of the light wire in view of the time it remained intact before rusting out.—Green vs. City of Reedsburg; Supreme Court of Wisconsin; 155 Northwestern, 938.

Summary of State Commission Hearings and Rulings.

ALABAMA.

April 3: Hearing on petition of the city commission of Birmingham asking that the Southern Bell Telephone & Telegraph Co. be ordered to reduce its rates in that city.

FLORIDA.

March 24: The commission granted the petition of the Little River Telephone Co. to put into effect in Wellborn, Fla., the following schedule of rates: Toll charge to non-subscribers, 25 cents; rural and residence stations, $2 per month; business stations, $2.50 per month. Order No. 510.

April 11: Hearing in the matter of free or reduced service given and discriminations in service and rates for service made by the Home Telephone Co., of Jacksonville. Notice No. 105.

IDAHO.

March: Complaint filed by W. B. Wadsworth, a resident of Kellogg, against the Interstate Utilities Co. because of its alleged continued refusal to place a telephone in his residence. He alleges the company's excuse is that it will have to erect two additional poles.

ILLINOIS.

March 28: Hearing in the case of Wm. H. Bentley, of Pontiac, Ill., vs. the Automatic Home Telephone Co. and the Central Union Telephone Co., for an order requiring a physical connection between the systems of defendant companies at Pontiac, Ill., and vicinity. Case No. 3,978.

March 28: Hearing on the application of the Noble Mutual Telephone Co. for permission to issue capital stock to the amount of $2,500. Case No. 4,421.

March 29: Hearing on the application of the Pitcher Telephone Co. (L. C. Morris, president) for an order authorizing the issue of its bond account in the aggregate amount of $3,500. Case No. 4,683.

INDIANA.

March 20: The commission completed its hearing on the proposed merger of the Indianapolis Telephone Co., of Indianapolis, Ind., the New Long Distance Telephone Co. and the New Telephone Co.

IOWA.

April 3: Continued hearing on the subject of interference of high tension power lines with telephone and telegraph lines in the state.

KANSAS.

March 24: Hearing on application of the Butler Telephone & Electric Co., of Eldorado, Kan., for permission to sell its properties to the Missouri & Kansas Telephone Co.

April 25: Hearing on application of the Missouri & Kansas Telephone Co. for permission to change its rates in the city of Wellington.

MINNESOTA.

March 28: Hearing on application of the Northwestern Telephone Exchange Co. to increase its local exchange rates at Glenwood, Minn. In the application it is alleged that the company has recently reconstructed the outside plant and converted the exchange from a magneto to a common battery service and in order to secure a reasonable return on the investment, it is necessary to increase its local exchange rates.

April 3: Hearing on petition of the City of Owatonna, Minn., for connection between the toll lines of the Tri-State Telephone & Telegraph Co. and the local exchange of the Northwestern Telephone Exchange Co. at Owatonna.

NEBRASKA.

March 25: Hearing on complaint filed by James A. Axtell and other rural subscribers of the Fairbury exchange of the Lincoln Telephone & Telegraph Co. against the recently established rate of $1.50. The complaint alleges that a solicitor obtained a number of contracts under the $1.50 rate through fraud and threat and asks that these contracts be declared null and void and a $1.25 rate be established.

OHIO.

March: Application filed by the Cleveland (Ohio) Telephone Co. for authority to issue and sell the remaining $2,000,000 of capital stock in the treasury and to issue and sell $3,000,000 of four-year, 5 per cent. notes.

March 27: The commission dismissed the application of the Medina County Farmers' Telephone Co. for a certificate of public convenience and necessity for the extension of its lines along the Wadsworth-Seville Turnpike in Medina county for such distance as would enable it to furnish exchange service to 24 subscribers of the Star Telephone Co., who had applied to it for such service, the application having been withdrawn.

March 31: Hearing on application of the Delphos (Ohio) Home Telephone Co. for permission to issue and sell $25,000 of its common stock to pay the cost of new equipment and extensions and betterments planned.

May 3: Postponed hearing on the protest of the Cleveland (Ohio) Telephone Co. against the tentative valuation of its property by the commission. This case was to have been heard March 9 but was postponed because of the disability of the director of law, Mr. Fitzgerald, of Cleveland.

OKLAHOMA.

March 22: Order authorizing the Pioneer Telephone & Telegraph Co. to increase its rate on business telephones in Tahlequah from $2 to $2.50 after the completion of the installation of a modern common battery system.

OREGON.

April 5: Hearing at Medford in the case of the Home Telephone Co. of Southern Oregon.

April 17: Hearing of complaint asking for an interchange of telephone service between the Pacific Telephone & Telegraph Co. and the Home Telephone & Telegraph Co., of Portland, Ore.

VIRGINIA.

March: Complaint filed by the Augusta Farmers Mutual Telephone Co. asking the commission to require the Staunton Mutual Telephone Co., which has been acquired by the Chesapeake & Potomac Telephone Co. to connect its switchboard with that of the petitioner.

WASHINGTON.

May 21: Hearing at Olympia on investigation of the Pacific Telephone & Telegraph Co. in the state of Washington. At this hearing the commission will consider the matter of rates; the question of segregation of properties used for local and toll service in the large cities of the state; and the question of discrimination and of switching rates on farmers' lines.

WISCONSIN.

March 24: Hearing in re application of the La Crosse Interurban Telephone Co. for authority to increase rate U—902.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—Part I, Telephone Economics, by James H. Shoemaker, Completed June 26, 1915—Part II, The Corporate Telephone Organization, by J. C. Kelsey and S. R. Edwards, Completed September 25, 1915—Part III, Telephone Accounting and Auditing, by James H. Shoemaker, Completed January 15, 1916—Installments Now Being Presented Comprise Part IV, Telephone Finance, Written by J. C. Kelsey and S. R. Edwards

Quiz Questions on the Preceding Installment.

64. What are the main features of participating bonds? Of profit-sharing bonds? Of joint bonds?

65. What is a convertible bond? What does the expression "convertible at 120" mean? How is the price at which the A. T. & T., 4 per cent. gold bonds shall be convertible into stock, figured?

66. State an objection to serial bonds.

67. What is a receivers' certificate?

68. What may be said regarding the security back of a receivers' certificate?

69. State some of the names applied to bonds that indicate the purpose for which they are issued.

CHAPTER VI. The Finances of a Telephone Company.

70. *Capital Funds.*—Having discussed the various methods and devices for obtaining funds, we may now consider the methods of handling them. As a rule, a new corporation does not need all the money contemplated at the start. This brings into existence the problem of what a corporation is likely to need. It is well known that many promising corporations have gone into bankruptcy because the last necessary money—relatively small in quantity—could not be raised.

The simplest method is to obtain subscriptions for securities that will provide more than enough capital, and to have the money payable in installments as, for instance, 25 per cent. down, 25 per cent. in three months, 25 per cent. in a year and 25 per cent. any time after as it may be needed. Buyers of securities do not object to installment payments; in fact, they are inclined to favor them.

71. *Fixed Capital.*—Fixed capital is that which cannot be readily converted into cash. The amount depends upon the nature of the business. Telephone companies must have equipment and do construction work; in fact, the telephone business requires a great percentage of its total capital as fixed. The real value of the part represented by fixed capital depends upon going value—in other words, the plant must be operated if the fixed capital has any value at all.

72. *Working Capital.*—Working capital really means the difference between current assets and current liabilities. In a telephone company, it represents the difference between the income and the expense. Enough money must be provided to pay all expenses until the income is collected. A telephone company having $100,000 capital, operating 1,500 telephones, and collecting $3,000 per month, should have not less than a $3,000-allowance for working capital. It is generally conceded by state commissions that the proper working capital represents one month's collections.

Manufacturing naturally requires large working capital because time must elapse before payments for the product are made; raw materials must be purchased at the proper time, and there are many variable factors. Operating companies—telephone, railroad, gas, electric and kindred activities—on the other hand, have a continuous demand for service and such service is paid for, either in advance monthly or quarterly.

The United States Steel Corporation has a working capital of $262,000,000 with a capital stock of practically $870,000,000. The Pennsylvania Railroad, with practically $2,000,000,000 capital, had more than $48,000,000 working capital when it was engaged in its greatest construction activities. Normally, $30,000,000 will take care of this great transportation system.

The operating company has the great preponderating proportion of fixed capital. The manufacturing company has a condition whereby fixed and working capital go hand in hand, in other words, they are about equal. The publishing company has little fixed capital but a great preponderating proportion of working capital. All three depend absolutely upon the fact that the industry is in a going condition.

73. *Forms in Which Working Capital is Held.*—Corporations have working capital in various forms, such as cash, bills receivable, raw materials, and security of others held temporarily.

Cash is desirable, but not too much as a loss of interest will result. Bills and accounts receivable must not grow too large, as such a condition indicates poor collections and credits. But so long as the amount of the receivables is normal, they form a dependable working capital.

Raw materials are sometimes bought at great advantage, as has been seen since the outbreak of the European war. Sometimes copper can be bought at a price which will more than pay to carry it along. Again a market will rise and information is sent out in advance which makes it imperative for the manufacturer to buy heavily.

74. *Securities in Other Companies.*—Every manufacturing company has fat and lean periods. After raw material is heavily bought, the lean period is at hand. Shortly after, the output begins to show its head and the corporation has more money than it immediately needs. So the management purchases listed bonds and holds them until the time comes to buy heavily again. Then the securities are sold and the accrued interest realized.

If every telephone company could make its securities active, every business house in its locality could use its bonds for temporary investment. Business is such that fat and lean periods do not fall alike, and the company bonds could pass from one company to another.

75. *Statement of a Telephone Company.*—The form of statement of a telephone company is as follows:

1. Gross earnings.
2. Deduct expenses *and taxes.*
3. Net earnings.
4. Add income from other *sources.*
5. Total income applicable to fixed operating charges.
6. Deduct depreciation and *reserve charges.*
7. Net earnings.
8. Interest.
9. Net earnings for stock.
10. Deduct *dividends.*
11. Surplus.

76. *Gross Earnings.*—There is much opportunity for deception in the gross earnings. Railways at one time paid out rebates in large quantities and then some forgot to deduct them from their statements of gross earnings. Telephone companies show gross earnings from which commissions should have been deducted.

Net station and toll earnings are what should appear in the gross earnings column—that amount of money which the telephone company earns and from which it must pay its own operating expenses.

77. *Operating Expenses.*—There has been much deception in the matter of operating expenses such as fictitious maintenance by which a controlling interest may steal from a corporation and invest elsewhere. It has been charged that the management of a great transcontinental railroad at one time built 1,000 miles of track and equipped it with the proceeds of an operating company which paid no dividends because maintenance charges were too high.

Construction charges may be charged against maintenance wrongly, or operating charges may be charged against construction. Today, accounting has been practically standardized and general honesty is the rule.

78. *The Depreciation Charges.*—The most sacred account is the reserve for depreciation. This comes ahead of bond interest, because, unless the property is kept up, the bondholder will eventually lose. Much has been said about reserves for depreciation and the question has vexed courts and commissions alike. The fact remains that no corporation can deny the need for existence of reserves for depreciation.

TELEPHONY has always advised telephone men to save something for the rainy day, whether it is 1 per cent., 3 per cent. or 6 per cent.; or $1 per station or $4 per station per year. Some definite saving plan must be adopted. Bondholders, stockholders and all creditors of the company depend upon the sacredness of depreciation or a fixed operating charge.

79. *Interest.*—Naturally interest charges must be paid when due. One prominent telephone man has said that the telephone business was a race between interest and rust on one side and bankruptcy on the other.

80. *Dividends.*—The payment of dividends has always been a problem. Cumulative dividends should be paid currently because time flies and accumulations pile up. It then becomes necessary to abandon dividends on common stock, and people, once accustomed to income, find it hard to do without it.

It is preferable to pay less all along than to pay more and finally quit altogether. One author has said that a dividend is the only non-productive expenditure a corporation makes, yet payment of dividends is the reason why a corporation has stockholders.

Dividends should be paid regularly and at a fixed rate. Naturally this rate should be fixed at a point where the poorest year of business will not interrupt its payment. A stock which pays 5 per cent. regularly has a better price and collateral value than one which has a dividend record of 8, 10, 0, 2, 5, etc.

The practice of paying dividends in stock and making use of the money in the property is unquestionable. Such a practice teaches economy to stockholders and saves something for their future. The corporation which defers dividends until it accumulates a satisfactory surplus has far happier stockholders than one which has paid 40 per cent., 20 per cent. and 0 in succession. It is human nature to value the thrifty higher than the unthrifty. This applies to stock as well as individuals.

81. *Extensions and Reasons for Them.*—Every prosperous company naturally reaches out for new fields to conquer. There are losing concerns to take over, new fields of development to cover and occupation of territory which might be covered by a competitor. To typify an average condition of expansion, the following letter written in 1901 to the stockholders of the Central Union Telephone Co. will suffice:

> After two months' investigation I find it imperatively necessary that at least $3,000,000 be provided without delay. The people of Illinois, Indiana, Ohio and Iowa want telephone service. Will you supply it or must some one else?
>
> Are you doing it with fewer than 70,000 telephones? No. When you have 300,000 exchange stations, then you have a good start, not before. When you have 150,000 telephones at proper rates, you will have a plant upon which you can earn something with which to build up the second 150,000.
>
> What you want done must be done now. Later on, and very little later at that, will be too late.

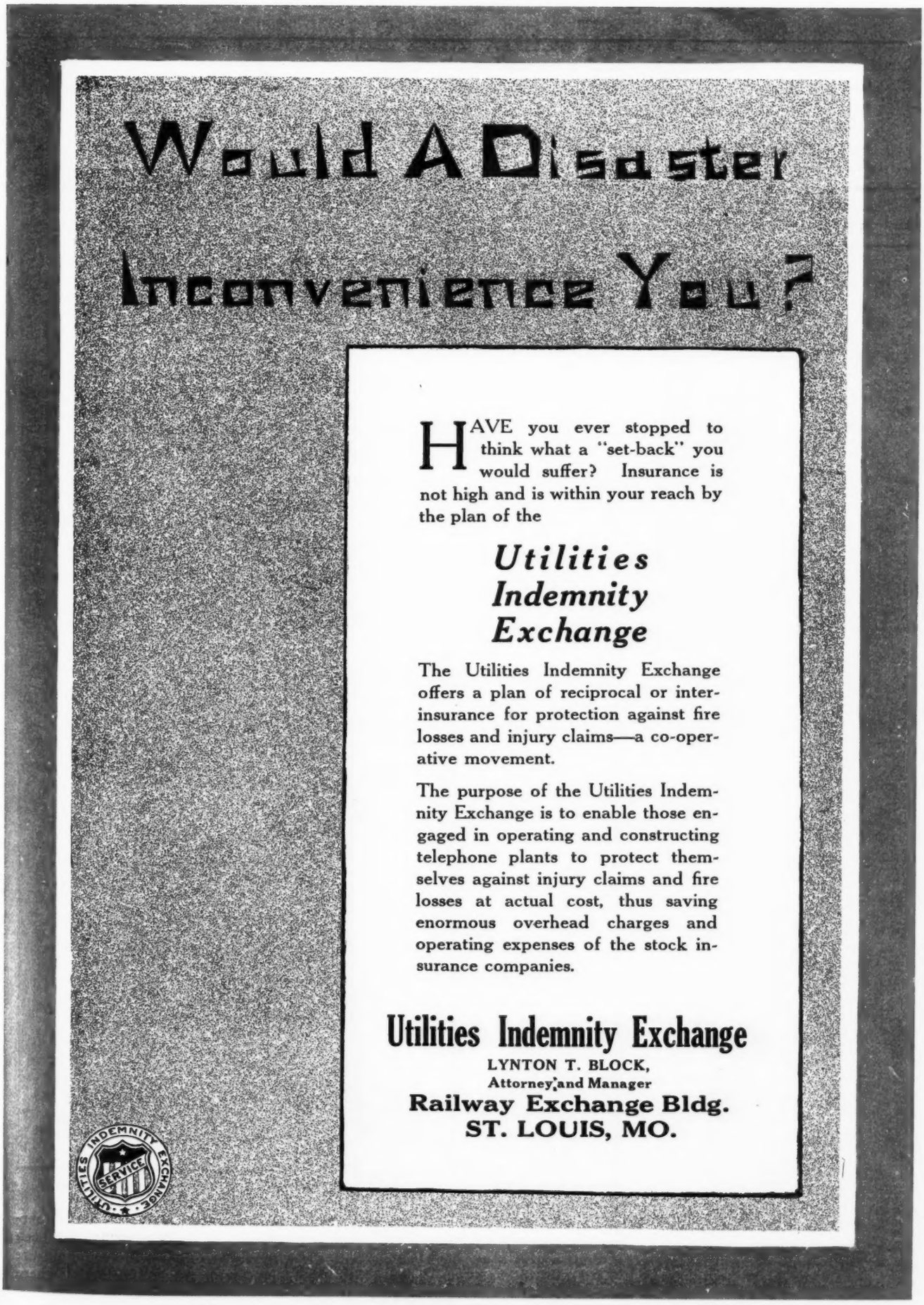
The idea was to restrict competition, improve the property so that it could be operated at lower cost, and enlarge the functions of the company. (*To be Continued.*)

Operators' School at Janesville, Wis.

Operators from all exchanges operated by the Rock County Telephone Co., in Southern Wisconsin convened at Janesville, March 23, to attend classes conducted by W. S. Vivian, of Chicago, secretary-treasurer of the United States Independent Telephone Association. Operators from Janesville, Milton, Milton Junction, Clinton and other towns, were present. A model switchboard had been installed in the city hall assembly room, where the classes met, and was used in practical demonstrations for correcting faults and explaining correct methods for telephone service.

Annual Convention of Railway Telegraph Superintendents.

The Association of Railway Telegraph Superintendents will hold its annual convention at St. Paul, Minn., on June 20. Much interest is being manifested in this meeting and it is expected that papers of special importance on the subjects of railway telegraphs and telephones will be presented by leading authorities. P. W. Drew, 112 West Adams Street, Chicago, is secretary of the association.


Would A Disaster
Inconvenience You?
HAVE you ever stopped to think what a "set-back" you would suffer? Insurance is not high and is within your reach by the plan of the
Utilities Indemnity Exchange
The Utilities Indemnity Exchange offers a plan of reciprocal or inter-insurance for protection against fire losses and injury claims—a co-operative movement.
The purpose of the Utilities Indemnity Exchange is to enable those engaged in operating and constructing telephone plants to protect themselves against injury claims and fire losses at actual cost, thus saving enormous overhead charges and operating expenses of the stock insurance companies.
Utilities Indemnity Exchange
LYNTON T. BLOCK,
Attorney and Manager
Railway Exchange Bldg.
ST. LOUIS, MO.
UTILITIES INDEMNITY SERVICE EXCHANGE

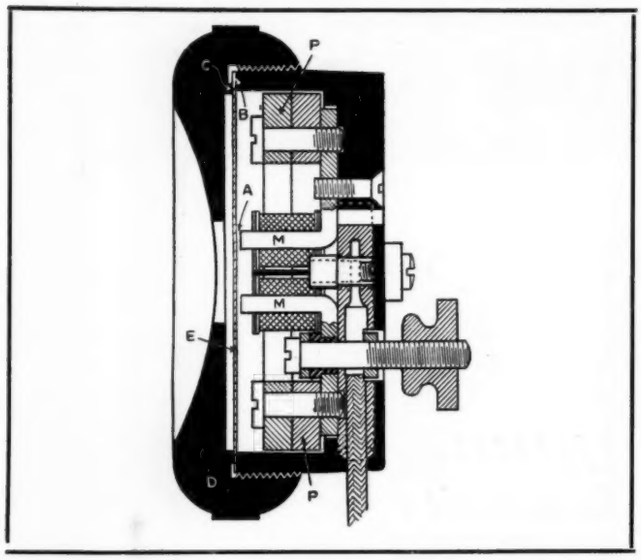
Please tell the Advertiser you saw his Advertisement in TELEPHONY.

From Factory and Salesroom

Conventions: Eastern Pennsylvania, Lancaster, April 13-14; Western Pennsylvania Quarterly Meeting, Pittsburgh, April 21-22; Southern States, Knoxville, Tenn., May 23-24

New Kellogg Bakelite Receiver Shells.

In 1877 the first receiver shell was made, and the search for a satisfactory receiver housing began. The shape of the shell, whether for "hand receiver" or "head receiver" was a comparatively simple matter, but the securing of a



Sectional View of Watchcase Receiver.

desirable material has been a serious problem. At the end of a period of nearly 40 years, a shell made of Kellogg Bakelite was developed which, it is believed, has solved this troublesome problem.

These Kellogg Bakelite receiver shells are said to be of permanent color and do not become a fuzzy olive green after being exposed to sunlight and perspiration. They do not warp or blister in the heat and moisture, it is stated, nor do they crack and flake. In fact, it is claimed that Kellogg Bakelite is an ideal material for containers of the receiver parts, as it is unaffected by moisture, acids and heat. It stands up under almost unbelievable rough usage without cracking and breaking, and is of high insulating quality. Constant use tends to polish it and increase the finish gloss.

The process of manufacture seems rather simple to the casual observer. He sees a man measure out a quantity of dark powder and pour it into a die which he places in a press and leaves to its fate, after twitching a couple of levers once or twice. If the observer is interested enough to wait a few minutes, he will see the man put on a pair of heavy gloves for lifting the hot die which he shifts to another press to force it open. Out of it he takes the finished shells and places them on the table to cool.

The material known as Bakelite is a synthetic or artificial rosin made by the distillation under proper conditions of formaldehyde and carbolic acid. For making receiver shells, mouthpieces, bushings, etc., it is mixed with a filler and dyeing material.

The machine equipment for running a Bakelite plant is complicated. Hydraulic pumps and piping for maintaining an extremely high pressure at the press rams are in constant use. Live steam at sufficient pressure to maintain a temperature in the dies far above the boiling point of water, must be available and a group of presses for various purposes must be provided.

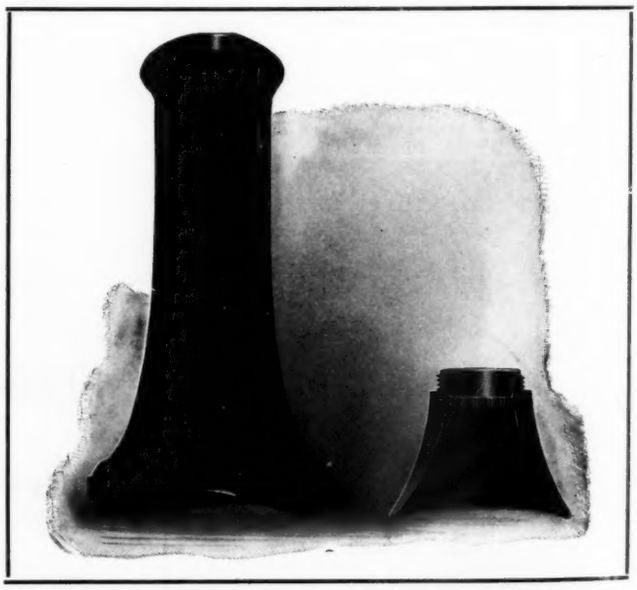
In addition to the machine equipment, a highly specialized set of dies is essential. Not only must a die be provided for each article made, but, it is said, they are examples of an unusual development in the die-making art.

All threaded objects such as receiver shells, ear caps, transmitter mouthpieces, etc., are molded in compound dies enabling the threaded portion to be molded with the rest of the piece, and several of these articles require special presses in order to obtain a satisfactory quality of output.

In molding the case for the operator's head receiver, six of these cases are made at once, the press being equipped with a die made up of six compound dies. After placing the proper quantity of the powdered material for each receiver in each of the dies, the press operator opens one valve to apply the hydraulic pressure and another to let the hot steam flow into the heating plates. The plates of the press come together, applying a pressure of about five tons per square inch on the surfaces of the receiver shells. This enormous pressure and the hot steam causes the ingredients of the powdered Bakelite to consolidate into the strong impervious mass of the desired shape and size.

The molding of the hand receiver is an even more complicated problem. In order to handle the work rapidly, the presses have two rams, one working from the side and the other from above, both being propelled by the same enormous line pressure.

The combination of using heavy steel dies and high hydraulic pressure, not only gives a material of the characteristics already described, but the dimensions are main-



Kellogg Bakelite Hand Receiver Shell and Mouthpiece.

tained within extraordinarily close limits. And furthermore, the construction details of finished shells have been worked out with the care and foresight evidenced in all the products of the Kellogg Switchboard & Supply Co., where fineness and accuracy of detail are desired.

STOP!

Replacing Decayed Poles

The Orr Process, applied to your butt-rotted poles, will make them stronger than ever.

Extreme simplicity througout the entire operation effects a saving of two-thirds the cost of a new pole.

When a thing's done better at smaller cost—that's big economy.

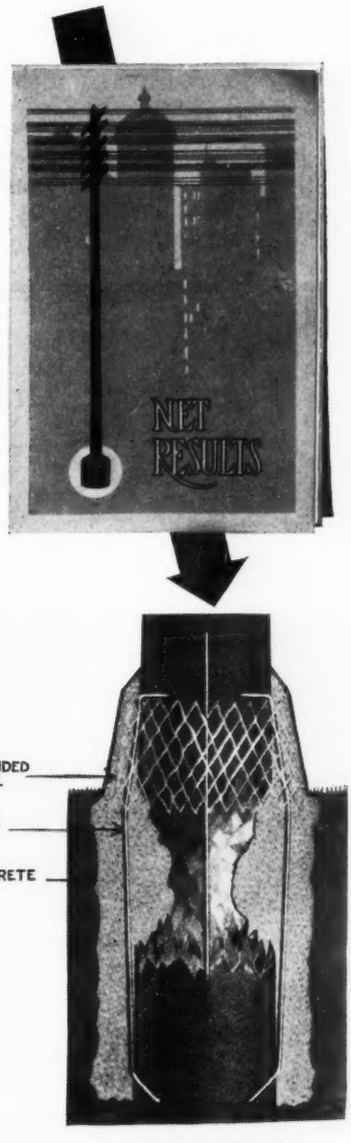
Only iron rods, concrete and expanded metal, costing from 1/3 to 1/16 as much as a new pole, are used. Entire process performed by one-half the labor (unskilled): one-half the time is required.

The ORR Process eliminates change-overs, skilled labor, new pole costs and transportation, interrupted service hazards to linemen.

ALL BIG ITEMS

Telephone companies all over the United States are adopting the ORR Process. Send for a copy of "Net Results" and read letters in which they give their opinions of the ORR Process.

Suppose there are poles with decaying butts on your own lines—what are you going to do about it? Won't you send us your name on a penny postal? We'll send you our booklet, "Net Results." It's all "lean meat," explaining and illustrating this simple process, and letters, too, from satisfied users—let's work together.



Cross Section of Orr-Reinforced Pole

HUBBARD & CO.

PITTSBURGH

NEW YORK CHICAGO SAN FRANCISCO

The details of the head receiver shell and cap are shown in the accompanying illustration. In all receivers, the critical operating dimension is the distance "A" between the diaphragm "E" and the pole pieces "M." When the cap "D" is screwed down tightly, the pressure on the diaphragm "E" must be such as to straighten it against the pull of the magnets "M" so that the distance "A" is 1/1,000th of an inch. In attaining accuracy for this delicate dimension the conditions of manufacture of this Bakelite shell are said to be particularly favorable. The accurate surface of the dies and the high pressure employed turn out a very perfect surface at "B" for the diaphragm to rest on, so that with this surface as a starting point, the locating of the ends of the magnets "M" is a comparatively simple matter. The same conditions allow the ridge "C" on the inside of the ear cap to have a true surface.

The advantages pointed out in using Bakelite for the operators' receiver shell are of equal value in making the hand receiver shell.

The Kellogg Switchboard & Supply Co., of Chicago, manufacturer of Kellogg Bakelite, summarizes the desirable features of this material for a receiver housing as follows:

Non-absorbent qualities, rendering it easy to clean.
Mechanical strength, reducing cost of maintaining.
Accuracy in dimensions, due to manufacturing conditions.

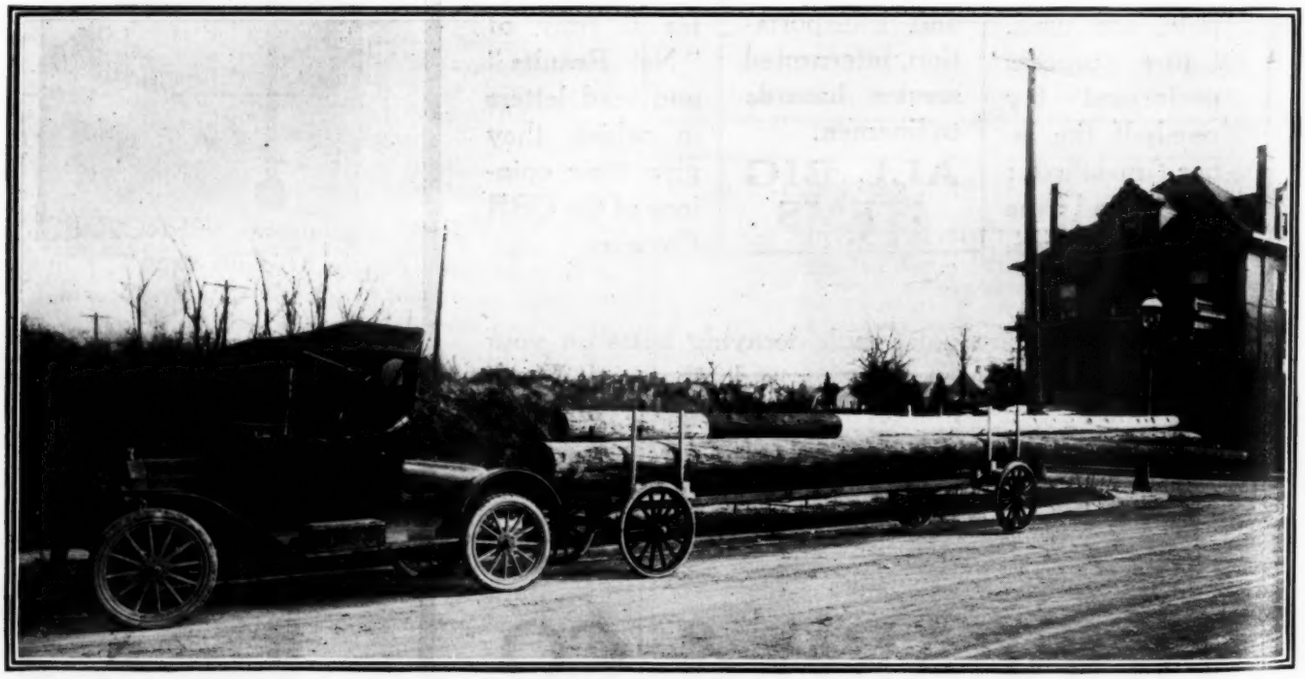
A Four-Wheel Automobile Trailer.

The practicability of the trailer for hauling telephone poles is being demonstrated daily in all parts of the country. The Trailmobile, which has been placed on the market by Sechler & Co., of Cincinnati, Ohio, is a four-wheel trailer designed to meet the needs of telephone companies. Its especially designed flexible frame attachment, spring draw-bar, drop-forged axles, roller bearings are some of the features which, it is said, give it mechanical perfection. One man, it is stated, can move a fully loaded Trailmobile, so easily does it run.

The long and short chassis can readily be interchanged by the removal of the spring bolt, so that the trailer may be used for hauling poles, as shown in the accompanying illustration, or for carrying other telephone materials and supplies used in construction work. The Trailmobile can be used for transporting poles, construction gangs, tools, materials, etc., to the scene of the day's activities. Then after detaching the Trailmoble the truck or car can proceed to carry out other work.

The United States government and one of the largest telephone companies in this country have just placed large orders with Sechler & Co. for Trailmobiles.

The company will be pleased to send further information to any telephone men who may be interested.



Hauling 45-Ft. Telephone Poles with the Trailmobile.

The Telefault for Inside Cables.

By O. F. Tallman.

Before the development and adoption of the Matthews Telefault, cable trouble was the most aggravating and expensive item with which the telephone man had to contend; but since the Telefault has been at the disposal of the cable department, a case of cable failure causes no more uneasiness than that of line, instrument, or switchboard troubles.

The Telefault itself, being so wonderfully successful in the maintenance of cable service, has not been considered seriously enough in other departments. It has been branded because of its wonderful work, as strictly a cable-testing instrument and no real effort has been made to determine whether it might not prove just as valuable to other departments.

If the Telefault is used in locating faults in switchboard and intermediate cables, the results are just as gratifying. As a time and money-saver it proves its worth equally as well as it has on the outside lead-sheathed cables. In fact, the trouble of switchboard and intermediate cables are much more easily located, because of their being much shorter—being hardly ever over 100 feet in length and usually from 20 to 40 pairs per cable, while outside cables contain as many as 1,200 pairs and are as long as 20 miles. This fact greatly increases the resistance of the wires to be used in making tests. Again, the general conditions inside are much more desirable for using the Telefault. There are no noises of any kind—no winds, no induction with

The Storm King Lantern

Wind and Rain Proof, 200 C. P., ¼ cent per hour. Burns gasoline or kerosene 15 hours per quart. Weighs 3½ lbs. Height 14 inches. The highest powered, safest, most economical lantern ever made for sportsmen, campers, farmers, contractors, boats, railroads, fairs, shows, etc. Ask your nearest Hardware or Sporting Goods Dealer for Demonstration or write direct for special Lantern Proposition.

National Stamping & Electric Wks.
Department 75 Chicago, Illinois

ADSIT TELEPHONE LOCKOUT COMPANY

ESCANABA, MICHIGAN

Manufacturers

Telephone lockout apparatus and automatic timing devices. Write for circular.

"FREE"—A book of complete Instruction with each System.
COFFEY SYSTEM AND AUDIT CO. Indianapolis, Ind.

THE PESCO LINE

The Protective Electrical Supply Company
Distributors of
TELEPHONE SUPPLIES
Of All Descriptions
Quality Goods at Right Prices
130-132 W. Columbia St. FORT WAYNE, INDIANA
Write for Catalog and Prices on Protective Can Top Cable Terminals

Why sacrifice your old equipment for new?

Don't imagine that because some of the parts are commencing to wear that you must replace?

"We can save you money" because we can repair your apparatus—or replace worn out parts, and will guarantee you satisfaction.

At least when you are situated that it must either be "old" or "new" apparatus let us show how the old can be continued serviceable. **Pack up your parts, whether one or twenty pieces, and ship to the**

Suttle Equipment Company
Olney, Ill.

TELEPHONY Advertisers
Get 100 Cents on the Dollar

HERCULES

America's Best Known Telephone

THERE are more "HERCULES" telephones used on country lines in the United States and Canada than any other kind. Satisfactory and continuous year after year service at low cost for maintenance is what counts. Every "HERCULES" telephone is sold on a "moneyback" guaranty, if not all we claim.

When you say "HERCULES," you know you have said the best. Don't think about any other telephone if your lines are long and extra hard to ring over.

Swedish-American Telephone Mfg. Co.
5237 Ravenswood Avenue
CHICAGO

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

which to contend—all of which are encountered when locating faults on outside cables.

As pairs or conductors go bad in switchboard and intermediate cables, it is now the common practice to switch or cut working lines to vacant pairs until all pairs available are thus used. Then the use of split pairs is resorted to. When this becomes no longer possible, the only thing left is to "shoot the trouble," which means to open the cable to a considerable extent at random and in many places.

When the trouble has finally been located and cleared, unless it has in the meantime been decided that the cheaper way would be to cut in a new section of cable, the openings are all wrapped and taped up.

The bank of switchboard or intermediate cables, whichever the case may be, looks so disreputable that from that time on, the employers take no pride in the appearance of the cables.

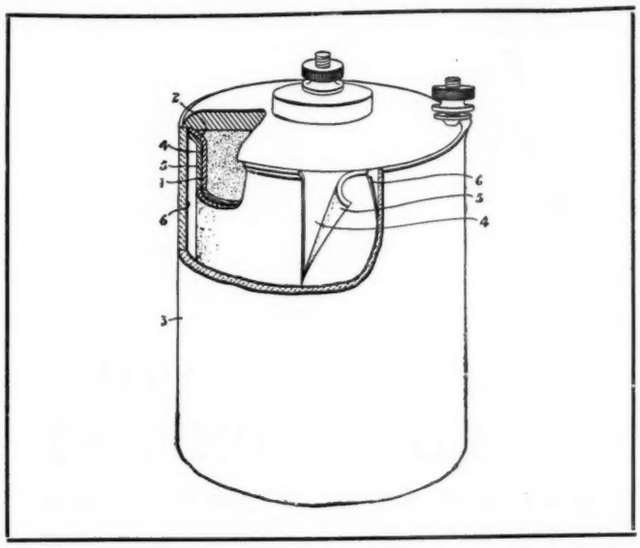
When further occasion arises for clearing trouble, instead of making the necessary effort to preserve the uniform appearance which cable had when first installed, the men are likely to take the easiest way of "getting the trouble." They are likely to feel that good time would be wasted in trying to do a neat job of lacing cables back in place, and they are left with a "lick and a promise" until they are ready for the "junk man" 25 to 50 per cent. sooner than they should be.

There is no reason why the life of inside cables should be limited, if they are given proper treatment. With a Matthews Woodpecker Telefault, intermediate and switchboard cable faults can be easily cleared, if in an outside cable, without cutting one lock switch; if on cable inside of the bank, just enough to allow cable to be brought to surface. No random cuts are necessary. Just one cut in the cable, one-half inch long and that one on the trouble.

The New "Master" Telephone Dry Cell.

With factories in Brooklyn, N. Y., Toronto, Ontario, Canada, and Manila in the Philippines, the United Battery Corporation is now manufacturing the Master telephone battery. The accompanying illustrations showing the factories of this company indicate that its facilities are ample for the production of various types of dry batteries.

The Master telephone battery is claimed to be impervious to harmful climatic conditions. Its deterioration when not in actual service is said to be practically negligible, thus rendering it especially adaptable for service in which there are long periods of inactivity, as found in telephone use. In manufacturing this battery it is stated that only the finest grade of materials are used under a special formula, the materials first being tested in the company's own laboratories. The batteries are tested after each operation and are required to come up to definite standards of uniformity and reliability.



Sectional View, Showing Construction of Master Cell.

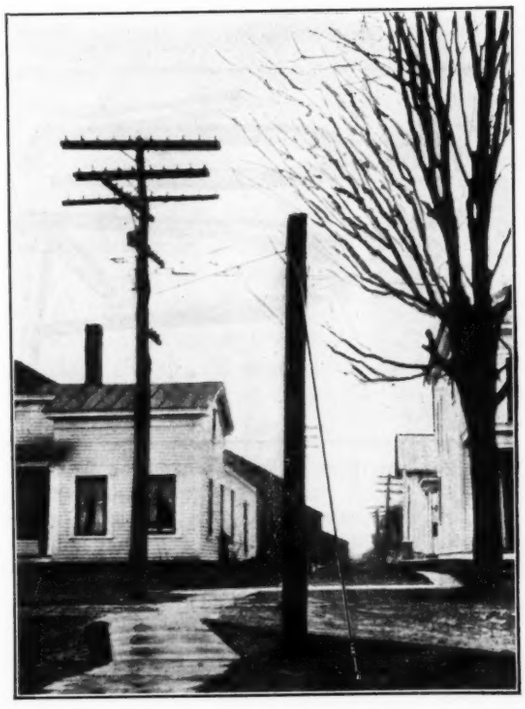
From the sectional view of the cell an idea may be obtained of its construction. The zinc cup is flanged outward at the top so that when the cell is placed in the outer container it leaves a dead air space, thus producing the same effect as regards temperature as is found in the thermos bottle. The outer container consists of a laminated fiber can, the layers of which are interlined with paraffine. The bottom consists of japanned metal crimped solidly into the carton, thus assuring rigidity in addition to the waterproof qualities of the carton.

As protection against the ill effect of moisture and excessive climatic conditions, the outside zinc cup is coated with a special bitumastic varnish which forms an insulative moisture-proof coating about the cell. While this paint is

The New "Master" Telephone Dry Cell and the Factories in Which It Is Produced, in Brooklyn, Toronto, and Manila.

Before Buying Anchors, Read This

Unsolicited Tribute to the "Harpoon"



This Is the Pole Referred to

December 3, 1915

Crouse-Hinds Company,
Syracuse, N. Y.

Gentlemen:-

Kindly send me copy of the Harpoon Guy Anchor Catalog and give me name of nearest jobber. We have only two of your anchors on our outside work, but they are fine. Two weeks ago we had a heavy snowstorm which took down a large number of poles and some anchors were pulled out of the ground, but yours held.

At one place in particular, one of your anchors held a big, 40-foot pole on a right angle corner. This pole carried a 30-wire lead to the left, as well as 20 wires of the Bell Company, our 100-pair cable and three heavy wires of the electric light company, all of which ran parallel to the street.

Our guy wire was run across the road and attached to a guy stub. This guy stub was anchored to the Harpoon Guy Anchor which held the whole outfit perfectly secure under probably as bad storm conditions as could be imagined. When I tell you that most of these wires were from two inches to three inches in diameter with snow and ice, and that the pole never budged an inch, you will realize the value of your equipment.

Very truly yours,

H. O. Woodward, Local Mgr.,

Erie Co. Telephone Co.,

Waterford, Pa.

Write for Harpoon Guy Anchor Catalog

Crouse-Hinds Company

Syracuse, N. Y., U. S. A.

NEW YORK BOSTON CINCINNATI CHICAGO

still drying, a sheeting of asbestos is placed around the zinc, thus forming a protection against the cold in winter and excessive heat in the summer.

With the sealing of the cell into the carton a dry cell is produced which, it is claimed, is absolutely water and weatherproof.

The specifications of the Master telephone battery give its size as 2⅝ inches by 6⅛ inches and a weight of 2⅛ pounds. Its voltage is 1.61 volts and the amperage ranges from 24 to 28 amperes and the internal resistance is 0.07 ohm. The cells are packed in the standard size barrel containing 125.

The United Battery Corporation also produces an ignition battery which is claimed to be ideal for use on gasoline engines, automobiles and motor boats and may also be used on open circuit work. It has a voltage of 1.55 and an amperage of 26 to 30, while its internal resistance is 0.049 ohm.

In addition to its dry cells the company produces a complete line of flashlights in all of the various styles. The United Battery Corporation 160 John Street, Brooklyn, N. Y., has adopted as the trademark the word "Master" and states that the word will be indicative of the quality of its products.

New Stromberg-Carlson Equipment for Calamus, Iowa.

The spring construction plans of the Farmers' & Business Men's Telephone Co., of Calamus, Iowa, include the installation of a new central office equipment to replace the former equipment which is now inadequate to meet the rapidly increasing traffic load.

The accompanying illustration was made from a photograph of the new switchboard taken before shipment from the Stromberg-Carlson Telephone Mfg. Co.'s factory at

Stromberg-Carlson Board to Be Installed at Calamus, Iowa.

Rochester, N. Y. The switchboard is wired and cabled for an ultimate capacity of 100 subscribers' lines and is arranged so that its capacity can be increased to 300 lines if required by the future development of the territory. At present there are 50 lines equipped with plug-restoring drop line equipments, 30 in the first position and 20 in the second position.

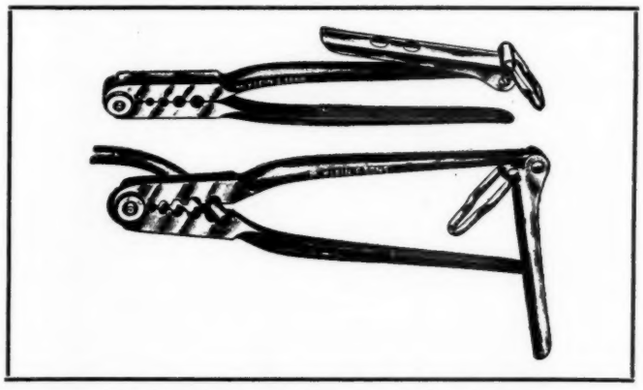
Each position is equipped with 15 pairs of cords with double ringing and listening keys. The first five pairs of cords in each position to the left of the operator are equipped with repeating coils. Each position is also provided with a master divided circuit ringing key.

The ringing generator equipment includes a pilot lamp mounted in the center of each position above the jack space. This lamp glows brightly when a short circuit or ground on the called line causes an excessive load on the ringing generator. With this equipment the operator can quickly detect any trouble on the various lines.

The contract for the central office equiphment included a terminal frame equipped with heat coil and carbon block protectors.

The Leverlink—An Attachment for Splicing Clamps.

A unique attachment for splicing clamps, known as the "Leverlink," is being marketed by Mathias Klein & Sons,



The Leverlink Attached to Splicing Clamps.

Chicago. It is in the nature of a desirable improvement, which will undoubtedly prove a welcome addition to the "connector" family. Its function is to clamp the connector handles, once the jaws are in place over the wire, thus holding the wire securely during the operation of splicing.

The Leverlink has a universal adaptation, being made for attachment to any standard size clamp. It is riveted to one handle of the clamp in such a manner as to allow the link to slip over the other handle. Pressing down on the lever locks the link in place and holds the handles of the clamp securely together, causing the jaws to grip the sleeve or wire like a vise. In case the wire is of a larger size than the clamp is adapted for, it still may be held firmly in the clamp by utilizing the Leverlink as a link. The illustrations show clearly the new attachment and the manner of its use.

Paragraphs.

R. S. Mueller, 423 High Avenue, S. E., Cleveland, Ohio, respresenting the Anchor Webbing Co., of Woonsocket, R. I., has issued net price list No. 13 of electrical tape webbing and sleeving. Copies of the price list may be obtained upon application to Mr. Mueller.

F. W. Buck, on April 1, severed his connections with the Union Electric Co., of Pittsburgh, Pa. Mr. Buck has been associated with the Union Electric Co. for the last eight and a half years in various capacities, including that of chief clerk, purchasing agent, and advertising manager, and for the last few years has had charge of the telephone department. He has accepted a position with the Hurley Machine Co., of Chicago—manufacturer of the Thor electric washing machines, ironing machines and vacuum cleaners—as representative in the Pittsburgh territory.

Cook's Protective News

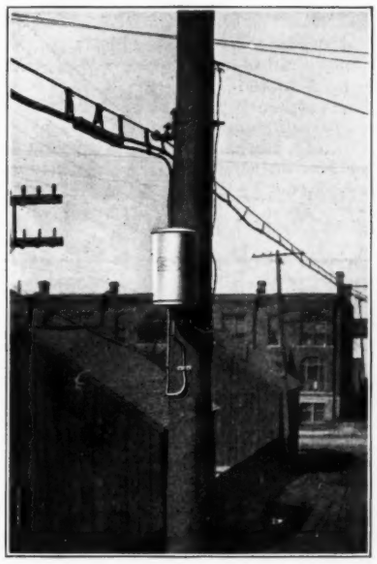
Vol. 1. No. 3 ***In the Interests of Adequate Telephone Protection*** **April 1, 1916**

Cook Carbons Specially Treated

Features that make for unusual service are found in every detail of Cook Protectors. Some of these features seem so small that to describe them is difficult and might almost seem like going into tiresome detail. For instance, wherever carbons are used these carbons are treated by a special Cook process, eliminating carbon dust and making them self-cleaning.

Occasionally the celluloid dielectric will be vaporized under the stress of a continued cross with high potential. That is when an absolute contact is needed. Mica dielectrics can be furnished, but they will not permit this contact feature, which belongs exclusively to Cook apparatus.

This may seem a small detail,—and it is. But it is just such care in little things that has given Cook Protective Equipment its high reputation. Write us about your protective requirements now.



Cook S-16 Terminal

What Counts

Did you tackle the trouble that came your way;
With a resolute heart and cheerful?
Or hide your face from the light of day
With a craven heart and fearful?
Oh, a trouble's a ton or a trouble's an ounce,
Or a trouble is what you make it,
And it isn't the fact that you're hurt that counts,
But only,—how did you take it?

NOW—Start Using Cook's Self-Welding Wire Sleeves

Now that Spring construction has started this is the very time to begin using Cook's Self-Welding Wire Sleeves. They are great time-savers and money-saves and make a thoroughly satisfactory job. They are stronger than the wire itself, eliminate moisture, and insure perfect conductivity. Ask for prices. They are surprisingly low.

Ask for circular on the new Cook No. 4 Lightning Arrester. Does the work at a price which will interest you.

Write Now for Prices on this New Cook Soldering Iron

Designed particularly for telephone work, the Cook Electric Soldering Iron is an unusually efficient tool. It saves time and does better work than other methods of soldering, and will pay for itself in a very short time by the savings it makes.

Do your soldering electrically and save time. Write today for full description and prices of the Cook Electric Soldering Iron. This is the iron you will want to buy.

Frank B. Cook Co.

326 W. Madison St. **Chicago, U. S. A.**

Record of Telephone Patents Recently Issued

1,171,415. February 15, 1916. SELECTING SYSTEM; O. A. Danielson, New York; assigned to Western Electric Co. This system consists of a plurality of selecting relays which control selecting devices. Provision is made for altering the circuit condition of the relays and devices so that the relays may function without affecting the devices. The circuit conditions may be restored so that any of the relays which have functioned may affect the corresponding devices.

1,171,429. February 15, 1916. TELEPHONE EXCHANGE SYSTEM; C. L. Goodrum, New York; assigned to Western Electric Co. A repeater circuit is described in this patent. The talking circuit is divided into sections and means, including feed coils and a source of current, are provided for inductively uniting the sections. An electromagnet having a sender to operate it, is included in one section of the circuit. An electromagnet is placed in the other section of the circuit having a shunt circuit about it which is controlled by the magnet first mentioned. An automatic switch is adapted to be set by the impulses produced through the use of the sounder.

1,171,460. February 15, 1916. TELEPHONE TRANSMITTER; S. C. Porter, New York. This transmitter, adapted to pick up sounds emanating from a distance, consists of the combination of a resonator whose front is open to the passage of sound waves and whose back is substantially flat with a sensitive telephone transmitter mounted therein and facing the back of the resonator with the diaphragm slightly separated from it.

1,171,520. February 15, 1916. CALLING DEVICE; H. Hovland, East Orange, N. J.; assigned to Western Electric Co. A dial calling device for automatic telephone sets is described. The dial has a plurality of operating positions and finger holds are provided for actuating it. A lever, adapted to be actuated by engaging with the finger in a finger hold, operates means to hold the dial locked when moved to any of its operating positions. An electromagnet controls an impulse-counting mechanism. Means controlled from a distant station are operative upon the locking of the dial, to actuate the electromagnet.

1,171,633. February 15, 1916. SOUND ABSORBING DEVICE; E. Osborn, and J. J. Nolan, Albany, N. Y. This device consists of a supplemental mouthpiece attached to the regular transmitter mouthpiece. A cloth diaphragm is interposed between the mouthpieces and partially covers the transmitter mouthpiece to absorb sound waves other than those sent directly through the mouthpiece.

1,171,745. February 15, 1916. TELEPHONE ATTACHMENT; G. P. Mundy, Washington, D. C. A device for use in connection with a desk telephone stand is disclosed in this patent. It consists of a cylindrical member secured to the base of a desk stand and containing a spring wound reel upon the drum of which is wound the desk stand cord extending to the bell box. A constant tension is kept upon the cord so that there is no loose cord dangling around the desk, the surplus cord being wound upon or unwound from the drum in the base of the stand as the position of the instrument is changed.

1,171,770. February 15, 1916. SIGNAL APPARATUS; R. B. Carter, Bloomington, Ind. Burglar and fire alarm apparatus is connected with the telephone line. The signaling means in connection with the burglar apparatus repeats more slowly than the fire alarm signaling means. The circuit-controlling and signaling means of each alarm apparatus is serially included in independent bridges of the telephone circuit.

1,172,277. February 22, 1916. SANITARY MOUTHPIECE PROTECTOR FOR TELEPHONES; E. R. Gorman, West Haven, Conn. A series of layers of fabric fitting within each other and the mouthpiece, have their outer edges secured to a plate attached to the outer edge of the mouthpiece. The layers are singly detachable and provided with holding flaps by which they may be taken singly from the series.

1,172,365. February 22, 1916. AUTOMATIC TELEPHONE EXCHANGE; A. Katz, Charlottenburg, Germany; assigned to Siemens & Halske, A. G., Berlin, Germany. The feature of this patent is the provision of means for testing the trunk lines before they are selected by the selecting devices.

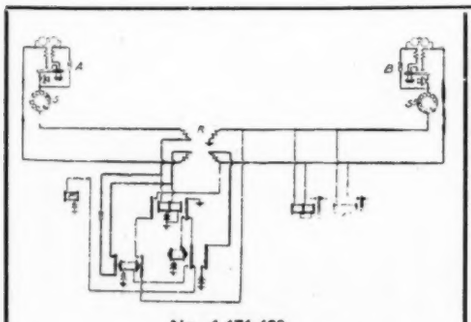
1,172,366. February 22, 1916. AUTOMATIC TELEPHONE EXCHANGE SYSTEM; O. Kirby, Chicago; assigned to Automatic Electric Co. In this invention a substation mechanism is provided at the calling substation and is responsive to each switching operation and operates in synchronism therewith. The initial operation of other mechanisms variably limits the operation of the substation mechanism so that the calling party controls the extent of the switching operations.

1,172,382. February 22, 1916. TELEPHONE ATTACHMENT; H. C. Merritt, Jr., Tuckahoe, N. Y. This attachment is designed to be attached to the base of a desk telephone set for holding various accessories. The holder is slidably mounted upon a support attached to the stand and arranged so that its outward movement may be limited.

1,172,402. February 22, 1916. TELEPHONE TRUNKING SYSTEM; C. E. Stephenson, Sioux City, Iowa; assigned to Automatic Electric Co., Chicago. The feature of this patent is the provision of automatic means for seizing either end of the trunk line. A circuit including one of the line conductors, supplies a guarding potential to the distant ends of the trunk when either end is seized.

1,172,526. February 22, 1916. SELECTIVE SIGNALING SYSTEM; J. B. Harlow, New York; assigned to Western Electric Co. In this telephone railroad train dispatching system, impulse selected semaphores at way stations are operated from the telephone dispatching station.

1,172,539. February 22, 1916. ELECTRICALLY CONTROLLED METER SYSTEM; J. W. Lattig, Glenside, Pa., and C. L. Goodrum, New York; assigned to Western Electric Co. In this call register device for automatic systems, call register controlling magnets are connected in each line circuit. Automatic connective means for the lines comprise circuits and circuit terminals through which current is supplied to the line. A called subscriber in answering a call operates means to change the direction of current supplied to his line and thereby operates his register.



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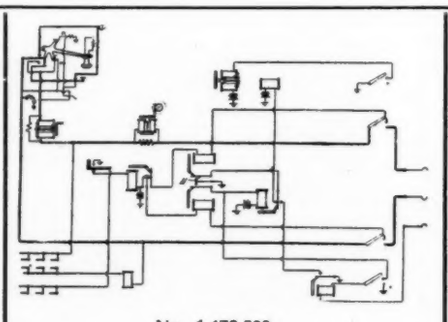

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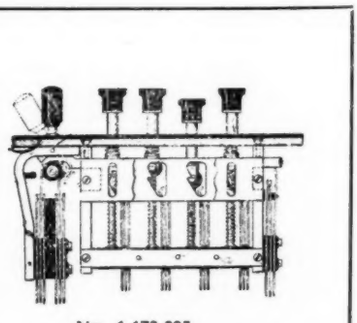
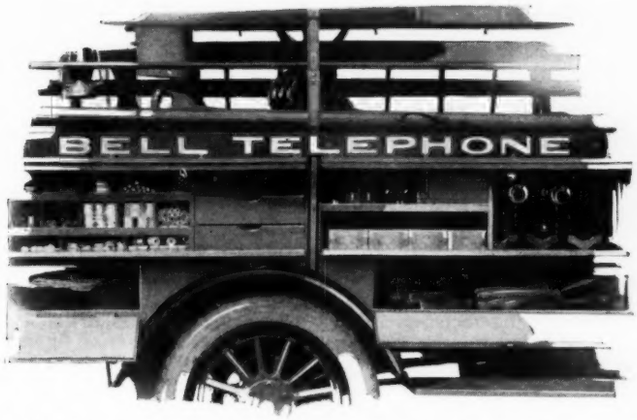


No. 1,173,095.

1,172,585. February 22, 1916. SELECTOR SWITCH; H. F. Dobbin, New York; assigned to Western Electric Co. In this switch a plurality of brushes is located upon a support and a plurality of series of contacts arranged to be traversed by each brush. Provision is made for moving the support initially to select the brush and associate it with the desired one of its series of contacts. A secondary movement follows to cause the selected brush to traverse the contacts in the selective series of contacts.

1,172,614. February 22, 1916. TELEPHONE LOCK; J. E. Lavalley, Portland, Ore. This lock is designed for use on desk telephones. It consists of a collar adapted to surround the standard of the desk stand above the receiver arm, thus to prevent the receiver hook from operating when the collar is in place.

1,172,658. February 22, 1916. ATTACHMENT FOR TELEPHONE DESK SETS; L. D. Allen, Chicago; assigned one-half to A. W. Heath, Chicago. A two-part clip is arranged to extend around



WHITE TRUCKS

For Telephone Service

THE White ¾-ton Telephone Truck has been especially designed and built for light construction work, farm line, small town and suburban work.

The body is mounted on a White ¾-ton Chassis and its plans have been carefully worked out by experts familiar with the requirements of telephone transportation. Each tool and piece of material used in this work has been given a special compartment or bin so placed that it will be the most easily accessible to the workmen. All details have been arranged for the saving of time.

The White Telephone Truck is the most complete piece of apparatus of its kind ever developed and its practicability has been highly approved by officials of many Bell and Independent Telephone companies.

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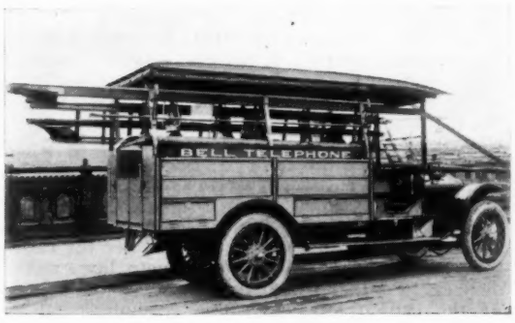

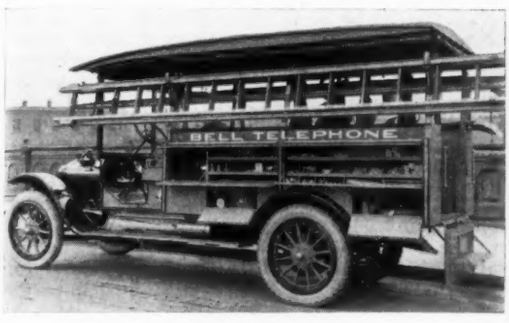

THE WHITE COMPANY

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the standard of a desk stand and to be clamped in position. One part of the clip has a latch arm arranged to overlie and hold down the receiver hook. The lower end of the latch member serves as a finger piece to operate the latch.

1,172,760. February 22, 1916. System of Call Distribution; H. M. Bascom, Brooklyn, New York; assigned to American Telephone & Telegraph Co. In this automatic call distribution system a group of devices are individual to a telephone set for connecting it to an idle circuit. A connection initiating device prepares all of the connecting devices for operation while means governed by the connecting devices determine the operation of the connecting devices in the group in rotation.

1,173,095. February 22, 1916. Party Line Key; A. J. Carter, Chicago; assigned to Kellogg Switchboard & Supply Co. This party line key comprises a rocking actuating member having locking and non-locking operating positions. Reciprocating ringing members have normal and locked positions. The actuation of the rocking member to a non-locking position will restore a previously actuated ringing member, while the actuation of a ringing member will restore the rocking member if in a locked position.

1,173,096. February 22, 1916. Lightning Arrester; F. S. Chapman, Toledo, Ohio; assigned to National Electric Specialty Co., Toledo, Ohio. A metal ball is secured to and in electrical contact with the line carbon plates of the arrester and held in place by a fusible material. When lightning discharges from the line plates to the ground plate, the fusible material is melted and the ball released, thus closing the gap between the line plate and the ground plate.

1,173,165. February 29, 1916. Lightning Arrester; L. S. Brach, New York. The feature of this vacuum lightning arrester is an electrode resiliently mounted in the vacuous container.

1,173,254. February 29, 1916. Switch Selector; A. F. Dixon, Newark, N. J.; assigned to Western Electric Co. In this switch selector which comprises a plurality of movable switch members, an armature is provided individual to each member. An actuating arm co-operates with each armature to move the individual member. Manual means selectively operate the actuating arm. An electromagnet locks the members in their selective positions. A circuit-closing device, actuated by the manual means, energizes the electromagnet.

1,173,332. February 29, 1916. Telephone Cable Box; K. F. Wincrantz, C. E. J. Nilson, and C. F. Pettersson, Stockholm, Sweden; assigned to Aktiebolaget, Stockholm-Stelefon, Stockholm, Sweden. The bottom of this cable box is removable and has a terminal block secured to it. Lugs are provided for securing the box to a support and a cover is hinged to the lugs in position to close the top of the box.

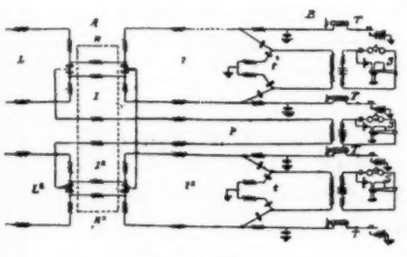
1,173,418. February 29, 1916. Pole Cross Arm; C. G. Ette, St. Louis, Mo.; assigned to St. Louis Malleable Casting Co. The feature of this patent is means for securing a cross arm to a pole. The cross arm is provided with a vertically disposed portion having curved wings projecting laterally therefrom in a different horizontal plane than the plane in which the cross arm lies. A fastening device projects into the pole through an opening at the center of the cross arm and other fastening devices project into the pole through openings in the ends of the wings.

1,173,560. February 29, 1916. Semi-Automatic Telephone Exchange System; H. P. Clausen, Mt. Vernon, N. Y.; assigned to Western Electric Co. The feature of this semi-automatic party line system is the provision of means for placing a busy potential on all of the multiple test contacts of the line whenever a connection is made with it, and to continuously maintain this condition to prevent automatic connection with other lines until the line is released. The operator is enabled to automatically connect with the busy contacts, irrespective of the existing busy condition, when a party on the line is desired by a calling subscriber.

1,173,562. February 29, 1916. Radio-Telephone Transmitting System; W. T. Ditchan, Twickenham, England. A spark gap discharger for wireless telephony is described. An electrode, mounted on the base, has radial cooling flanges. A flange near the upper end of the electrode supports a centrally recessed block of insulating material having inlet and outlet pipes. The block has a cover of insulating material and an internally screw-threaded flange plate is placed on the cover above the electrode. Another electrode is screwed into this flange plate. This electrode is provided with radial cooling flanges and a head of insulating material placed upon it.

1,173,564. February 29, 1916. Operator's Calling Device; A. H. Dyson, Chicago; assigned to Kellogg Switchboard & Supply Co. This calling device for semi-automatic systems comprises a keyboard upon which are mounted a number of sets of impulse keys of different digit values, one for each digit in each set. An automatic switch is controlled by the keys for transmitting variable series of impulses, the series corresponding in number to the number of keys actuated.

1,173,655. February 29, 1916. Phantom Circuit; F. H. Fay, Brooklyn, N. Y.; T. Shaw, Hackensack, N. J., and J. J. Pilliod, Chicago, assigned to American Telephone & Telegraph Co. This invention is applicable to a telephone circuit comprising side circuits, which together furnish a phantom circuit, and physical extensions of the side circuits and phantom circuit. A phantom forming device from which the phantom extension is led, inductively associates the side circuits and their extensions. An auto transformer having its windings in series with the side circuits and extensions, furnishes direct current paths through the phantom-forming device to connect the respective sections of the conductors of the side circuit. Provision is made for preventing disturbances in the circuit extensions resulting from the establishment of direct current paths.



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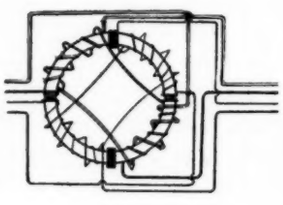

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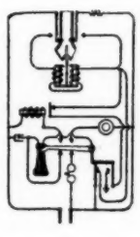

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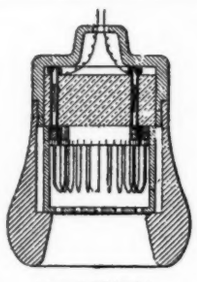


No. 1,174,554.

1,173,754. February 29, 1916. Automatic Recorder for Telephone Messages; H. G. Stalker, Navan, Ontario, Canada. This is an electromagnetic device which is operated through contacts made when the receiver hook is actuated. The actuation of the electromagnetic device or relay causes the closing of an electric circuit which causes movement of a combination of levers to record the call.

1,173,772. February 29, 1916. Telephony; E. R. Corwin, Chicago; assigned to Frank B. Cook Co. The feature of this semi-automatic system is the provision of mechanism governed by station apparatus of the calling lines for causing the operation of motor devices which actuate line-extending switching devices, to cease upon changing the relationship of the contacts of the calling lines with their complemental contacts. This causes the operation of a master switch to bring another motor device into operation. The master switch is prevented from bringing the motor devices that have been arrested by calling lines, again into operation while the calling lines are in circuit with the calling station telephone.

1,173,773. February 29, 1916. Telephony; E. R. Corwin, Chicago; assigned to Frank B. Cook Co. Link connectors effect connection between telephone lines and electromagnetic connector switching devices extend the link connectors that have been connected with calling lines and are individual to the link connectors of the group. A master switching device is common to and interchangeably associated with the link connectors of a group and takes part in the control of the operation of these connector switching devices. Calling subscriber controlled setting up switching mechanism selects the connector switching devices which are to be operated.

1,173,774. February 29, 1916. Telephony; M. L. Johnson, Chicago; assigned to Frank B. Cook Co. The feature of this inven-

Driven —twisted —and firmly embedded

By One Man

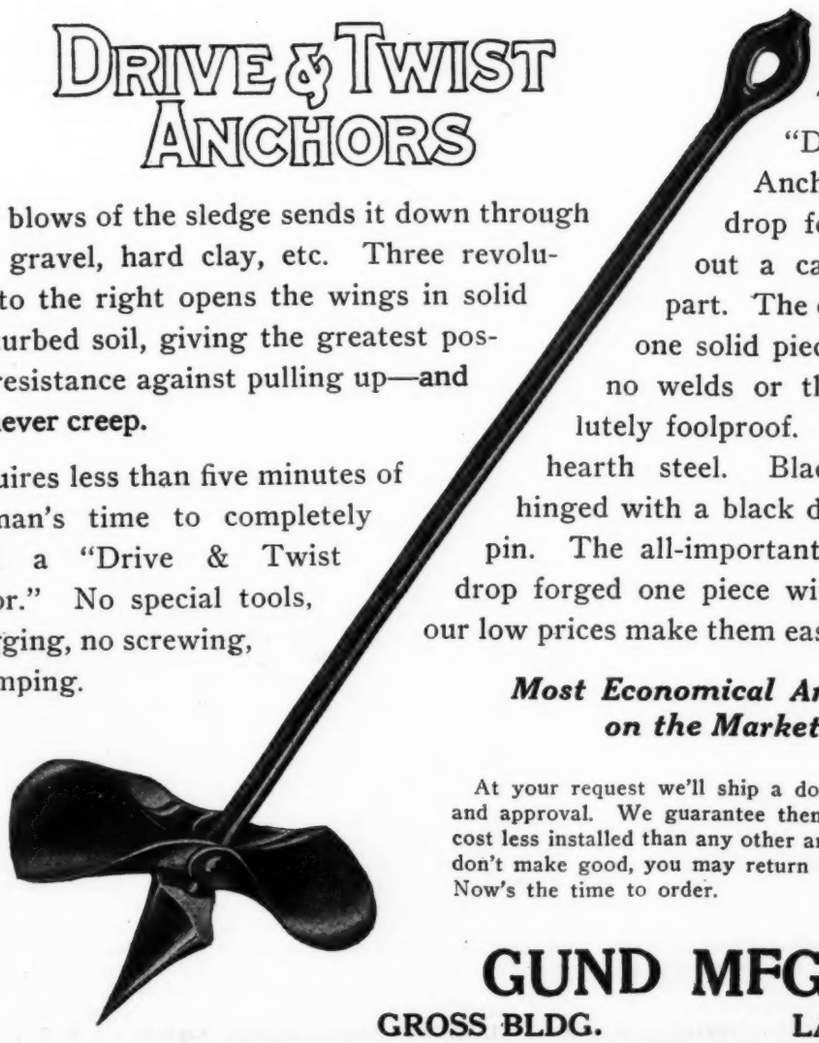
In a Few Minutes

No Method Could Be Easier or More Efficient

DRIVE & TWIST ANCHORS

A few blows of the sledge sends it down through roots, gravel, hard clay, etc. Three revolutions to the right opens the wings in solid undisturbed soil, giving the greatest possible resistance against pulling up—and **they never creep.**

It requires less than five minutes of one man's time to completely install a "Drive & Twist Anchor." No special tools, no digging, no screwing, no tamping.



NEW MODEL

The latest model "Drive & Twist Anchor" is made of drop forged steel without a casting or welded part. The eye is drop forged one solid piece with the rod—no welds or threads and absolutely foolproof. The rod is open-hearth steel. Blades are of steel hinged with a black diamond tool steel pin. The all-important driving point is drop forged one piece with the rod. And our low prices make them easily the

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tion is the provision of an announcer for informing subscribers of the termination of predetermined periods of service. Timing mechanism is arranged for timely bringing the announcer into operative association with talking telephone lines. Subscriber and operator controlled means extend the periods of telephonic connection and place the announcer in condition for re-operation at the termination of the period extensions.

1,173,775. February 29, 1916. TELEPHONY; M. L. Johnson, Chicago; assigned to Frank B. Cook Co. In the handling of toll calls a transmitter is provided at the call-receiving operator position for operating a recording receiver included in the connecting operators' equipments. A selector switch selects an idle recording receiver and an additional recording receiver is located in the presence of a third operator and is operable by the transmitter of the call-receiving operator.

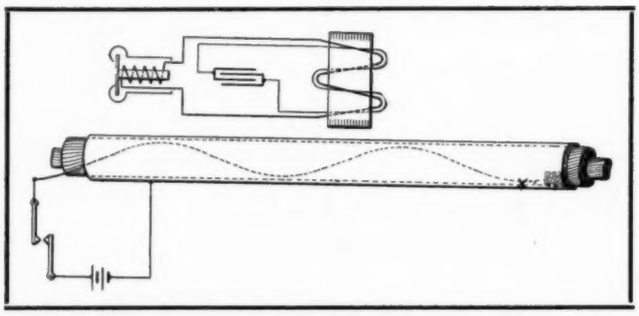
1,173,776. February 29, 1916. TELEPHONY; E. R. Corwin, Chicago; assigned to Frank B. Cook Co. In this semi-automatic system provision is mad e so that the operators' responsive devices are unresponsive to telephone lines in normal condition and responsive when in abnormal condition, thus preventing the extension of accidentally grounded telephone lines.

1,173,777. February 29, 1916. TELEPHONY; E. R. Corwin, Chicago; assigned to Frank B. Cook Co. The feature of this semi-automatic system is the provision of a master switch which is interchangeably associated with the calling line sections for predetermining the calling line ends for use and is governed by the called line sections when operatively coupled with the calling line sections.

1,173,957. February 29, 1916. WIRELESS TELEGRAPHY OR TELEPHONY; W. Hahnemann, Kiel, Germany. This patent relates to a sending station which comprises at least two pairs of subaqueous or ground electrodes arranged so that straight lines passing through the members of each pair would lie at substantially right angles to each other and between which alternating current of different phase and low frequency may be passed for wireless subaqueous or ground signaling.

1,174,187. March 7, 1916. LOADING COIL; T. Shaw, Hackensack, N. J.; assigned to American Telephone & Telegraph Co. In this loading coil the core sections are separated by gaps and a plurality of separate winding sections are arranged on each core section. One winding on one part of a core section is separated by a gap from another winding section on another part of the core section, the extent of separation between the winding sections tending to equalize their mutual impedances.

1,174,200. March 7, 1916. INSPECTING INSTRUMENT; O. F. Tallman, St. Louis, Mo.; assigned to W. N. Matthews & Brother. This instrument is designed particularly for detecting faults in telephone cable conductors such as may be caused by short circuiting, grounding, or the presence of wet spots in the cable. The device consists of a laminated core member made up of a bunch of soft iron wires upon which is placed a duplex winding composed of a portion of the receiver circuit and a portion of the condenser circuit. The ends of the wire of the receiver circuit are connected with the terminals of the coil of a polarized telephone receiver so that a closed circuit is formed through the coil and about the core. In the other winding a condenser is placed in series. In using the instrument an interrupter in series with a source of current is



No. 1,174,200.

connected to the line in trouble so that a magnetic field is produced about the cable as far as the call, but no farther. This field will have the particular characteristic produced by the test current. Bringing the wound core of the testing instrument within this field, an induced current is set up in the receiver and condenser circuit and a vibration of the diaphragm caused.

1,174,262. March 7, 1916. TELEPHONE SYSTEM; E. H. Martin, Webster City, Iowa, and P. H. Ferguson, Oak Park, Ill. The feature of this system is an electrically actuated indicating device associated with the connecting means at the central office. An operator's key is provided for closing the circuit of the signal. It is operative to close the circuit only after a definite time interval measured from the instant of initially actuating the key. The signal is effaced by means controlled over the telephone line. The device is intended for use in long distance calls and notifying the parties as to the expiration of the time periods. It may be installed in booths or in the offices of heavy toll users.

1,174,434. March 7, 1916. TELEPHONE PAY STATION; G. E. Mueller, La Grange, Ill.; assigned to Kellogg Switchboard & Supply Co. The pay station device is located at the subscriber's station. It includes a polarized disposing magnet with mechanism adapted to respond to the magnet for collecting or returning a deposited coin. Automatic switching apparatus at the exchange is connected to the line and an operator's calling device extends the automatic apparatus to a called line. The circuit connections, which include the magnet and a source of current, are effective when the calling receiver is replaced to operate the magnet to collect or return a deposited coin according as a response has or has not been secured from the called line.

1,174,484. March 7, 1916. CLAMPING DEVICE FOR ELECTROMAGNETS; L. Ericson, Chicago; assigned to Kellogg Switchboard & Supply Co. This clamping device comprises an angularly disposed flat spring clamping plate adapted to have one portion inserted between a core and a helix positioned upon the core. Means are also provided whereby another angular portion may be clamped so as to yieldingly hold the helix upon the core.

1,174,554. March 7, 1916. THERMIC TELEPHONE; O. Fischer, Utrecht, Netherlands; assigned to Naamlooze Vennootschap De Nederlandsche Thermo-Telephoon Maatschappij, Utrecht, Netherlands. This thermic telephone consists of a casing in which is placed a carrier set. The latter consists of two annular conducting members insulated from each other and provided with openings, and wire loops, the ends of which are secured to the respective conducting members at the openings.

1,174,599. March 7, 1916. TELEPHONE PAY STATION; G. E. Mueller, La Grange, Ill.; assigned to Kellogg Switchboard & Supply Co. A pay station for an automatic telephone is described. A member normally locks the dial of the calling device against actuation. Electromagnetic means, which include this member, are controlled by a deposited coin for unlocking the calling device. Other mechanism collects or frees a deposited coin according as a response is or is not secured.

1,174,613. March 7, 1916. CONTRIVANCE FOR TRANSMITTING SOUND TO SOLID SOUND CONDUCTORS; E. Ruhmer, Berlin, Germany. This contrivance consists of a telephone receiver, an elastic element attached at one end to the solid sound conductor and a flexible connection between the receiver diaphragm and the free end of the elastic conductor, the flexible connection being normally held under tension.

1,174,708. March 7, 1916. FASTENER FOR TELEPHONE TRANSMITTER; A. J. Gattermeir, California, Mo. In this transmitter a bolster supports a detachable bridge plate. A plate spring having a stud thereon extends laterally outward from the bolster. A mouthpiece supporting member, seating on the base, detachably, engages the stud of the spring.

1,174,881. March 7, 1916. TELEPHONE BRACKET; J. B. Ludlum, Marion, Ind.; assigned to J. S. Ludlum, Marion, Ind. A type of lazy tongs is used in this bracket for holding desk stands. A contractile spring is provided to return the bracket to an upright position.

1,175,048. March 14, 1916. TRANSMITTER; J. J. Comer, Chicago; assigned to Automatic Enunciator Co., Chicago. The granular resistance cell of this transmitter is loosely mounted upon a stem to which is secured a diaphragm. An electrode of the granular cell is rigidly mounted on the stem so that when the diaphragm is vibrated the electrode is moved relative to the cell or casing. Means are provided for adjusting the connection between the stem and the casing to thereby regulate the movement of the electrode with respect to the casing.

1,175,082. March 14, 1916. APPARATUS FOR THE ELECTRIC TRANSMISSION OF SIGNS OR SPEECH IN MINES; J. H. Reinke, Bochum, Germany; assigned to Studiengesellschaft fur drahtlose Grubentelefonie M. B. H. Cologne-Lindenthal, Germany. The rails, pipes and other metal construction in mines are used as conductors in this system. The transmitting station comprises a primary coil, a microphone and a current generator in circuit with the primary coil, while a secondary coil is connected to the conductive metal construction.

1,175,104. March 14, 1916. TELEPHONE SYSTEM; B. D. Willis, Chicago; assigned to Automatic Electric Co. This patent relates to the connections between main and branch exchanges when extensions for lines terminating in and normally con-

ERICSSON STEEL TELEPHONES

Five Reasons Why You Should Use Them

1st— They are the handsomest telephones made, and subscribers are pleased with them and take pride in keeping them neat. They put a stop to chronic kickers.

2nd— They are built to last almost indefinitely. The black enamel finish will outlast any known wood polish and will match any color of woodwork or inside finish.

3rd— They cost no more than reliable telephones of other makes, and are worth considerably more to you. They do not deteriorate and they save you the heavy maintenance expense you have been accustomed to with others.

4th— They are made by a manufacturer with a reputation for making the best telephone apparatus known. Their guarantee makes you safe.

5th— You will be using Steel Telephones altogether some day, so why not begin now. The sooner you get acquainted with the Ericsson kind the better pleased you will be later.

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Jacksonville, Fla., 24 W. Forsythe St.
Lincoln, Neb., 136 So. 10th St.
Los Angeles, Cal., 1233 So. Olive St.
Louisville, Ky., 514 W. Main St.
Minneapolis, Minn., 19 N. 6th St.
New Orleans, La., 810 Canal St.
Pittsburgh, Pa., 31 Terminal Bldg.
Portland, Ore., 329 Ankeny Ave.
Richmond, Va., 5 Governor St.
San Francisco, Cal., 530 Golden Gate Ave.
Spokane, Wash., Paulsen Bldg.
Toronto, Canada, 36 Adelaide St.

ERICSSON MFG. COMPANY

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nected to the branch exchange extend to the main exchange. When a subscriber on a line connected to the branch exchange, calls for connection with another line of the branch exchange, a line signal associated with the extensions of the line at the main exchange indicates to the operator when a call is being made. Means are provided at the branch exchange for establishing connection between two such lines and for disconnecting the extension lines from the main exchange. Another signal is associated with each extension at the main exchange and is controlled over the two sides of the extension in parallel to indicate to the main exchange operator that the line is in use.

1,175,111. March 14, 1916. MEANS FOR PREVENTING INDUCTIVE DISTURBANCE IN THE TEST CIRCUITS OF TELEPHONE SWITCHBOARDS; H. M. Bascom, New York; assigned to American Telephone & Telegraph Co. The test conductors are connected to the terminals of a plurality of differentially arranged primary windings of a repeating coil. The primary windings are arranged to produce opposite inductive effects in the secondary windings to which the operator's telephone is connected.

1,175,112. March 14, 1916. TELEPHONE SYSTEM; H. M. Bascom, New York; assigned to American Telephone & Telegraph Co. In this system a supervisory relay has its winding in the cord circuit. Another relay which is energized upon the connection of the cord circuit to a line, acts to disconnect the current source from the cord circuit and to short-circuit the supervisory relay, thus altering the effect of the impedance of the supervisory relay in the circuit.

1,175,119. March 14, 1916. AUTOMATIC TELEPHONE SWITCHING APPARATUS; A. H. Blessing, Chicago; assigned to Automatic Electric Co. An automatic connector switch having motion in two intersecting planes is associated with the line. Operating magnets control the motion of the switch in the different planes. The circuit of the second operating magnet is closed upon the initial movement of the switch in the first plane. A slow-acting relay maintains the circuit open at a second point until the switch has completed its first motion. Other means prevent the operation of the second magnet after the second magnet is substituted for the first magnet to the control of the relay until the relay is operated over the line circuit.

1,175,396. March 14, 1916. TELEPHONE SYSTEM WITH SERVICE METERS; G. D. Wolf, Chicago; assigned to Kellogg Switchboard & Supply Co. The feature of this system is the provision in the cord circuit of meter mechanism for independently registering both partial and completed connections. The meter mechanism is placed in condition for operation upon the connection of the cord circuit with the calling line. Upon disconnection of the cord circuit, the mechanism is actuated to register a partial connection. Upon response of the called party, the means for registering the partial connection is rendered ineffectual and the meter mechanism is actuated to register a completed connection.

1,175,488. March 14, 1916. TELEPHONE SWITCHBOARD OPERATING AND SIGNALING DEVICE AND SYSTEM; H. S. Turner, San Diego, Cal. The feature of this system is a jack plug provided with insulated plate contacts which are independent of but connected to the jack contacts of the plug. Means on the jack plug are adapted to be manipulated by the operator's hand for breaking the circuit of one of the plug connecting wires without disturbing the connections of the plug jack contacts so that the operator's circuit may be included in circuit with one only of the two talking subscribers.

1,175,579. March 14, 1916. SERVICE METER CIRCUIT FOR TELEPHONE SYSTEMS; F. Aldendorff, Antwerp, Belgium; assigned to Western Electric Co. In this automatic system electromagnetic means are associated with the connector switch for controlling the initial movement of a propelling device of a conversation counter after the called subscriber answers. Line relays associated with the calling line subsequently operate to complete the action of the counters to effect registration.

1,175,670. March 14, 1916. TELEPHONE MECHANISM FOR TROLLEY CARS; L. Zsitkovszky, Philadelphia, Pa. Details are given of an arrangement for making connection to telephone wires through the trolley pole.

1,175,896. March 14, 1916. TELEPHONE APPARATUS; B. D. Willis, Chicago; assigned to First Trust & Savings Bank, Chicago. In this automatic system provision is made whereby subscribers may be automatically connected with a special service line. Arrangements are made so that one operator may disconnect from the line and direct incoming calls to the next operator. Means are also provided for supplying talking current over a portion of the first line to the calling subscriber's line.

Condensed News Reports

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

G. R. HOWE, manager of the Eau Claire, Wis., exchange of the Wisconsin Telephone Co., has been transferred to Kenosha.

DAN SMITH, of Rock Island, Ill., has been appointed manager of the Moline (Ill.) exchange of the Central Union Telephone Co.

J. E. BONNELL, local manager for the Wisconsin Telephone Co., at Kenosha, has been transferred to the management of the Eau Claire (Wis.) exchange.

C. A. WARNER, formerly owner of the Morocco Telephone Co., Morocco, Ind., has purchased the telephone plant at Monon, Ind., taking possession April 1.

LEWIS AMIS, secretary of the local office of the Cumberland Telephone & Telegraph Co., at Columbia, Tenn., has been appointed manager of the Shelbyville, Tenn., exchange.

C. D. PERRIN, of the Lincoln exchange of the Lincoln Telephone & Telegraph Co., has been promoted to the position of district traffic manager, with headquarters at Hastings, Neb.

W. J. BAER, local manager of the Central Union Telephone Co., at Pontiac, Ill., has been promoted to the district managership of the Alton district, with headquarters at Alton, Ill.

C. L. SLUYTER, district traffic manager of the Lincoln Telephone & Telegraph Co., with headquarters at Hastings, Neb., has been promoted to the position of traffic engineer at the Lincoln office.

CARL O. MONTGOMERY, manager of the Moline (Ill.) exchange of the Central Union Telephone Co., has been made manager of the Pontiac and Dwight exchanges of the company, with headquarters at Pontiac, Ill.

RUSSELL ROTTGER, cashier of the Central Union Telephone Co. for the entire state of Illinois, outside of Cook county, with headquarters at Springfield, has been made manager of the Vermillion County Telephone Co., of Danville, Ill.

New Companies and Incorporations.

BOWLING GREEN, KY.—The Porter Pike Telephone Co. has been organized with $500 capital. The incorporators are: Leslie Thomas, F. E. Hendrick and J. V. Hendrick.

REED, KY.—The Reed Rural Home Telephone Co. has just been organized with $1,000 capital by the following incorporators: Frank Roberts, G. N. Mitchell and P. V. Smith. The latter will be manager.

MERRIFIELD, MINN.—The Mission Rural Telephone Co. was incorporated recently with a capital stock of $5,000. The incorporators are W. S. Hunt, A. C. Taylor, F. B. Home and C. Tampel.

ALVA, OKLA.—The Manilla Telephone Co. was incorporated recently with a capital stock of $450. The incorporators are C. R. Williamson, J. Murray, J. Hendricks, W. L. Grantham and H. M. Stoner.

SPRINGDALE, N. J.—The Haddonfield Rural Telephone Co. was incorporated recently with a capital stock of $2,000. The incorporators are E. J. Daugherty, E. Ballinger, C. D. Ballinger, A. W. Warrington, E. R. Warrington and F. C. Ames.

GRANITE FALLS, N. C.—The Granite Telephone Co. was incorporated recently. The total authorized capital stock is $25,000, of which amount $1,250 has been paid in. F. A. Henderson, J. D. Elliott, of Hickory, and about a dozen others are incorporators.

SARLES, N. D.—The Smith Telephone Co. was organized recently and the company will incorporate under the same name. The following were elected to the board of directors: J. E. Barker, E. J. Martz, Martin Estenson, C. C. Sprinkell and A. C. Buhcolz. F. C. Leppert was elected secretary and treasurer. The proposed line will cover 23 miles.

LOOMIS, S. D.—The Loomis Telephone Co. was incorporated recently with a capital stock of $10,000. The incorporators are J. S. Bonham, H. D. Lewis and F. J. Smith.